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MEDICAL HELMINTHOLOGY: A REVIEW—(PART I—*cont.**)

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PLATYHELMIA—TREMATODA (Hermaphroditic forms—*cont.*).

Gastrodiscoides hominis.

The systematic position of this parasite found first by LEWIS and MCCONNELL in 1876 has been the subject of consideration by several workers. Placed in the genus "Amphistoma" by the discoverers, FISCHOEDER, in 1902, on account of the flattened ventral aspect transferred it to the genus *Gastrodiscus*, and in 1913 LEIPER made it the type species of a new genus named *Gastrodiscoides*. The validity of this separation of the species from other forms, *G. aegyptiacus* and *G. secundus*, met with in the horse in Africa and India respectively has been questioned by LANE (1922), but has been supported more recently by KHALIL (1923). It would appear that the parasite is fairly common in Assam and in Annam. BRAU and L. BRUYANT (1913) report its occurrence in 5 per cent. of the pigs in Cochin-China, and KHALIL (1923) has described a heavy infestation in a Napu mouse deer (*Tragulus napu*) from the Malay States. He is of opinion that the presence of the genital pore on the elongated cephalic portion of the body and the absence of "pseudo-suckers" from the ventral aspect of the discoidal portion of the body remain characters of generic significance which distinguish *Gastrodiscoides* from *Gastrodiscus*.

Watsonius watsoni.

Although this parasite is reported as common in Nigeria (MANSON, 1921), these reports are not based upon an actual examination of the specimens, and the first record of its presence in man made by CONYNGHAM in 1904 remains the only valid case in literature. The systematic position of the parasite has been discussed by STILES and GOLDBERGER (1910) who have made this species type of a new genus and have shown from a re-examination of the original specimens that the testes are tandem in position in the body. The reservoir host would appear to be *Cercopithecus callitrichus*, for RAILLIET, HENRY and JOYEUX have found specimens of the parasite in the caecum of this monkey in French Guinea.

* Continued from Vol. 19, pp. 361–365. For Part II (CESTODA) *see* Vol. 20, pp. 85–91.

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KOBAYASHI (1920) now considers that the parasite from *Macacus cynomolgus* named by him in 1915 *Watsonius macaci* is probably identical with this species. Recently MAPLESTONE (1923) has drawn attention to the close similarity of the genera *Watsonius* and *Pseudodiscus*, and inclines to the opinion that *Watsonius watsoni* is identical with *Pseudodiscus hawkesii*, a parasite hitherto known only in Indian elephants.

PLATYHELMIA—TREMATODA (Unisexual forms).

Schistosomidae.

Amongst the Platyhelmia the occurrence of unisexual and dimorphic forms is of great rarity, being found in only two or three small genera, one of which, however, named *Schistosoma* or *Bilharzia*, has attracted much attention on account of its medical and economic importance as well as the special problems and theories associated with its transmission.

Prior to the work of LOOSS (1899) which resulted in the classification of the Distomes upon their internal characters, the Bilharzia worms were thought to form a peculiar and isolated group, but further studies, notably those by ODHNER (1912), have revealed the course of phyletic development of these unisexual blood worms from a hermaphroditic intestinal parasite, resembling the genus *Liolope*, and proceeding through various successive stages of specialization as seen in the genera *Hapalotrema, Bilharziella, Ornithobilharzia* to *Schistosoma*.

In the genus *Schistosoma*, seven species are now known. Two of these, viz., *S. haematobium* and *S. mansoni*, occur in man alone as natural infections, while two, viz., *S. japonicum* and *S. bovis*, occur in domesticated animals as well as in man in the same endemic areas. The other species *S. bomfordi, S. indicum, S. spindalis* (MONTGOMERY, 1906) occur in domesticated animals, *e.g.*, horse, sheep, cattle, etc., and it is not at all improbable that they may, like *S. bovis*, occasionally invade man as incidental infections. Such infections may provide an explanation for the sporadic occurrence of cases of bilharziasis in India. These cases have hitherto been diagnosed solely upon the eggs found in the urine and it is noteworthy that there is a very close resemblance between the eggs of *S. indicum* and those of *S. haematobium*. In this connexion reference may be made to the elaborate studies upon the cercariae which occur in Indian molluscs by SEWELL in 1922.

Differentiation of Species.

S. haematobium was discovered by BILHARZ (1852) and its anatomy had been worked out by LOOSS (1895). In this description, however, there is some confusion with *S. mansoni* which LOOSS had not recognised as a distinct species. *S. japonicum* was first found by KATSURADA, and described by him in detail in 1904. *S. mansoni* was named in 1907 by SAMBON on the peculiar shape of the egg and geographical range. Its anatomy was described by HOLCOMB (1907) and DA SILVA (1908), but the differential characters were not definitely determined until 1916 (LEIPER). *S. bovis* was discovered by SONSINO in cattle and sheep in Egypt, and later in Sicily, Sardinia and Nyasaland. It was not considered to be a parasite of man until CAWSTON (1921) recorded a case of vesical infection in Natal, in which, along with typical eggs of *S. haematobium* there occurred the elongate spindle-shaped eggs which appear to be peculiar to *S. bovis*. The presence of intermediate

shapes in the same patient renders the case of doubtful validity. Support of the view that *S. bovis* is actually an occasional parasite of man may be forthcoming from the Congo where REYNAUD and LEGER (1922) and others have recently found cases of rectal bilharziasis without cystic involvement due to eggs tending towards the shape of those of *S. bovis*. In anatomy *S. bovis* closely resembles *S. haematobium*, but no morphological details have yet been published.

S. japonicum.

Various earlier Japanese observers had succeeded in obtaining experimental infections of domesticated animals—cats, dogs, cattle, etc., by immersing them for periods in the waters covering the flooded rice fields, but in 1912 MIYAGAWA described in the *Centralblatt f. Bakt.*, the morphology of the young worms at the time of skin invasion, and their passage into the blood, and to a less extent the lymphatics. The invasion forms were described as possessing an oral and a ventral sucker, and as being covered with cilia. These invasion bodies were seen to differ in essential characters from miracidia and, having characteristics of cercaria, an intermediate host was hypothecated. In September 1913, MIYAIRI and SUZUKI announced in the *Tokyo iji-shinshi* the experimental invasion with miracidia of a dark coloured snail with seven spirals collected from the ditches of an infected locality in the island of Kuysuhu. Twelve days after infection rediae and secondary rediae concentrated in the hepatic ducts of the snails. Mice were placed in the vessel in which the full grown snails were fed, and after three weeks numerous schistosomes were found in their livers. During the summer of 1914, LEIPER [see LEIPER and ATKINSON (1915)] working in Katayama on the Japanese mainland, confirmed MIYAIRI and SUZUKI by infecting white mice with cercariae from naturally infected specimens of *Blanfordia nosophora*. These cercariae were found to develop constantly in thin-walled sporocysts, not in rediae. At first it appeared possible that the experimentally infected snails used by MIYAIRI and SUZUKI were naturally infected with another form, but the fuller publication of the results of these workers [MIYAIRI and SUZUKI (1914)] showed that the stages they had interpreted as rediae were really sporocysts. The morphology of the miracidium and its external covering was elucidated by MIYAIRI and SUZUKI (1914) and CORT (1919), and in the same year OGATA (1914) published an account of the cercaria of which a more detailed study has been made recently by CORT (1920). The intermediate host first named *Katayama nosophora* by ROBSON (1915) was referred to the genus *Blanfordia* by PILSBRY, and to *Hemibia* by ANNANDALE. Still more recently it has been recognized as synonymous with *Hemibia japonica*. In 1922 SUYEMORI found that *Blanfordia formosana* acted as the intermediate host of *S. japonicum* in Formosa and during the present year MELENEY and FAUST have shown *Hemibia hupensis* to be the carrier in the Yangtse Valley.

The migration of the parasite after its entry through the skin has been studied in detail by NARABAYASHI (1916) who believes that the young forms having reached the lung, burrow through the tissue into the mediastinum and so reach the portal system by piercing the surface of the liver, while MIYAGAWA and TAKEMOTO (1921) hold that these are aberrant forms and that those which succeed in reaching the portal system are forms which have remained in the capillaries of the lung and so gained the systemic circulation, in which certain of them

reach the capillary network of the gut wall which they also traverse, thus reaching the liver from the finer branches of the portal vein. SUYEYASU (1920) supports NARABAYASHI, believing that the young worms after leaving the lung can pierce the diaphragm at any point and so reach the liver.

Prophylactic measures in Japan are based upon the knowledge that *Hemibia japonica* is the only intermediate host, that it is provided with an operculum whereby it can close its shell and can resist drying, but is markedly susceptible to lime (NARABAYASHI, 1916). The snail inhabits the ditches of the rice-growing regions to a much greater extent than the rice fields. The known geographical range of the disease in Japan is closely related to the distribution of the rice-growing areas.

In endemic regions the incidence of urticaria and of fever following upon immersions in shallow pools and marshy areas became associated with *S. japonicum* in the minds of physicians before the mode of infection of this parasite was understood. To Dr. HOUGHTON belongs the credit of definitely associating the two conditions (LOGAN, 1912). Under the term Yangtse fever clinical studies were published by EDGAR in 1912. The condition known as " Kabure," an inflammation of the skin, was held by TSUCHIYA (1913) not to be directly associated with the entrance lesion of the schistosome parasite. TSUCHIYA noted, however, that during the initial symptoms of *S. japonicum* infection there was a rise of temperature and symptoms resembling typhoid or paratyphoid, and that during the course of the disease there was a marked enlargement and tenderness of the liver and increase in the size of the spleen. NARABAYASHI (1916) takes the opposite view that there is a definite relationship between schistosomiasis and Kabure.

LANING (1914) recognised three stages in the onset of Schistosomiasis as a result of a study of cases among American sailors stationed on the Yangtse.—The onset with high temperature, high eosinophilia and evanescent oedema, urticaria, with pains in the abdomen; the development later of an enlarged spleen with the passage of blood-stained mucus containing eggs of the parasite and the supervention three or five years later of a cirrhotic liver, ascites, oedematous extremities and marked emaciation; the passage of blood and mucus in the stools with little fever. CHASTANG (1914) and BOVAIRD and CECIL (1914) deal also with these symptoms. An early study of the blood, with its high eosinophilia in these cases, had been made by BASSETT-SMITH in 1912.

FUJINAMI and SUEYASU (1917–1918) have shown that naturally immune animals and even plants are entered by the cercaria of *S. japonicum,* but in non-susceptible animals become surrounded by giant cells of the " foreign body " type and eventually disappear.

In the treatment of *S. japonicum,* earlier workers had relied with little success upon quinine. In 1913 HUTCHESON published results on the treatment of thirteen cases of dysentery with emetine. Antimony introduced by CHRISTOPHERSON in 1916 [*see* CHRISTOPHERSON, 1918, 1919] was used successfully by CAWSTON and by LIBBY (1923) in cases of *S. japonicum.* The diagnostic method introduced by FAIRLEY (1919) for detecting schistosome infections by using as an antigen an extract of the liver of an infected snail has been shown to be effective in *S. japonicum* with antigen prepared from *S. haematobium* cercaria in *Physopsis africana.*

S. mansoni.

This species, created by SAMBON in 1907, was the subject of considerable controversy (LOOSS 1911—SAMBON) and its separation a matter of individual predilection until 1915 when LEIPER described the chief morphological characters in which it differs from *S. haematobium*, the differentiation being made from specimens of both species reared in experimentally infected animals. LEIPER (1915) showed that this species in Egypt is transmitted by *Planorbis boissyi*. LUTZ, working in Brazil, implicated *Planorbis olivaceus* as a carrier and showed that in *P. ferrugineus* and *P. tenagrophilus* infection did not mature (1916, 1917). The full account of LUTZ's observations appeared in 1919. In Venezuela the question of the carrier was studied by ITURBE and GONZALEZ (1917). These authors implicated *P. guadeloupensis* as the true intermediary in Caracas and described and figured a redia in the developmental cycle, stating that their observations corroborated the evolutionary stages described by MIYAIRI and SUZUKI for *S. japonicum*. Their illustrations, however, do not support this conclusion, and an examination later by FAUST (1918) of the original material showed that the schistosome redia was an encysted Tetracotyle. The cercaria of *S. mansoni* in Venezuela was described by ITURBE in 1917, and in detail by KHALIL (1922). LEIPER, LEE and KHALIL showed that *P. olivaceus* occurred naturally infected in Paramaribo, Dutch Guiana, in 1921. *P. guadeloupensis* has a distribution corresponding to that of the disease in the West Indies and is the probable carrier in these Islands. At one time much was made of the fact that the eggs of *S. mansoni* occurred only in the faeces. The intestine wall would appear to be the natural habitat of the parasite, but occasionally there is a slight invasion of the bladder wall, and a few eggs occur in the urine. Several such cases have been recorded (MACFIE, 1920).

Following LETULLE (1905) the pathology of *S. mansoni* infection has been described by DARLING (1913 and 1918), AMEUILLE and MAGNE (1918) from Martiniquan cases, by RISQUEZ (1916, 1919) from Venezuela and GONZALEZ (1916), who first brought evidence of the prevalence of intestinal schistosomiasis in Porto Rico, has given a clinical picture based upon the study of 356 cases. GIRARD (1920) recorded for the first time the presence of this species in Madagascar and its sporadic occurrence in Natal has been noted by CAWSTON (1921).

As in the cases of *S. japonicum*, there are early symptoms, abdominal pain, enlarged and tender liver and spleen, pyrexia, bronchitis, urticaria and diarrhoea. These have been fully studied by LAWTON (1917, 1918).

S. haematobium.

The anatomy of *S. haematobium* has been the subject of a monograph by Looss (1899) but the specific characters, especially those relating to the testes and gut, included characters later proved to be specific to *S. mansoni* (LEIPER, 1916). In 1915 the life history of the parasite was shown by LEIPER to take place in species of the genus *Bullinus*, *B. dybowski*, *B. contortus* and *B. innesi* in Egypt, and in *Physopsis africana* in the Transvaal by BECKER (1916). CAWSTON had previous to BECKER published a note implicating *P. africana*, but it is evident from his illustrations that the cercaria and sporocysts first found by him in this host belonged to a totally different species and was probably not a schistosome cercaria at all. During the early years succeeding the discovery of the Bilharzia development the term

schistosome cercaria was applied very loosely and erroneously to all cercariae having bifid tails, and many of the statistical records of the occurrence of " Schistosome cercariae " in molluscs are on this account valueless. Later CAWSTON succeeded in identifying the true bilharzia cercaria and in innumerable papers located the carriers in various parts of South and East Africa. Dr. Annie PORTER (1920) found the cercariae in *Limnea natalensis*, but this would not appear to be of frequent occurrence, for the species also occurs in Egypt and has not been implicated either there or in South Africa by other workers.

The bionomics of *S. haematobium* cercariae and of its carrier have been studied in detail in Egypt by LEIPER (1915–6–8) and later by FAIRLEY and MANSON-BAHR. Preventive measures introduced during the war were based upon the short life of the cercaria after it had left the intermediate host. Suggestions for eradication of the infection by the extinction of the intermediate hosts fall into three categories—(1) LEIPER (1915) believes that in Egypt the disease could be controlled by utilizing the summer rotations in irrigation, which would result in the killing off of the Bullinus in vast numbers, as these snails are very susceptible to drying. (2) Various observers, first KEATINGE and later CAWSTON, ELGOOD and CHERRY (1919) have urged the utilization of flocks of domesticated ducks to eat up the snails. CAWSTON has made successful experiments in this line on a small scale in South Africa. (3) The destruction of the snails by chemicals has been advocated by LEIPER (1915), by Asa CHANDLER (1919), and by KHALIL (1922). The efficacy of copper sulphate, which is lethal in the dilution of 1 in 1,000,000, first introduced by CHANDLER, opens up a promising line of prophylaxis (KHALIL). The eradication of the disease, however, may be approached from another angle, for CHRISTOPHERSON, who brought into active use the intravenous treatment of schistosomiasis by antimony compounds, specially tartar emetic and colloidal antimony, has shown that antimony treatment results in the early death of the miracidia within the egg-shell so that a short time after the commencement of the treatment the patient, although still passing eggs in reduced numbers, has ceased to be a source of danger to others (CHRISTOPHERSON, 1919).

During the war there was much concern lest this disease should be introduced into countries hitherto uninfected, and the origin of an outbreak of schistosomiasis at Gaza was traced to the introduction of infected troops from Egypt. In Mesopotamia small outbreaks occurred, but 30 per cent. of inhabitants of some of the villages on the banks of the Tigris were known to be infected. The molluscan carrier in Mesopotamia has not been ascertained. *Bullinus contortus* occurs in the regions, but was seldom found alive. In India, sporadic cases of infection with *S. haematobium* led to a wide Zoological Survey during which it was proved that the molluscan genus *Bullinus* was not endemic in India. There seemed little likelihood of a widespread outbreak of schistosomiasis but several cases occurred in the neighbourhood of Hyderabad after the return of infected troops from Egypt. The probable source of these infections was revealed recently as a result of an enquiry by BETTENCOURT and BORGES into the occurrence of vesical schistosomiasis in Tavira in Portugal. It has been shown by these and other investigators that *Planorbis dufourii* is an efficient intermediary for *S. haematobium*. It would therefore appear probable that in India one of the local species of Planorbis has been a source of infection.

In the treatment of schistosomiasis two drugs have been found of immense value during the past few years. MacDonagh had treated successfully with tartar emetic a few cases during the Boer War, but had not published his conclusions until 1915 and then in a form which attached little importance to the discovery. In 1917, Christopherson, working in Khartoum, placed the treatment upon a firm and scientific footing, and many later workers have confirmed the claim that in antimony we have a certain cure for schistosomiasis. That the drug is given intravenously and over a period of days makes it a difficult method where the patient is merely a carrier, but a campaign combining curative treatment with molluscan eradication should prove effective in eliminating the disease in the endemic areas. The efficacy of emetine in schistosomiasis appears to have been noted first by Hutcheson in cases of *S. japonicum* (1913), but its use in *S. haematobium* infections has been urged by Mayer (1918), Diamantis (1917), Bonne (1919), and Erian (1919).

The clinical aspects of *S. haematobium* infections have formed the subject of excellent monographs by Madden (1907 & 1919), and the pathology has been the subject of new observations by Ferguson (1917) and others. Fairley's studies on the experimental pathology of *S. haematobium* and *S. mansoni* infections and the correlation of these with the pathological conditions seen in man is a masterly piece of work while his elaboration of a Bordet-Gengou reaction by which infections can be detected deserves special notice (1919). The recent advances on the clinical and pathological aspect of the subject have been fully dealt with in Byam and Archibald (1923).

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KALA AZAR.

PRICE (J. Dodds). **Thirty Years' Experience of Kala-Azar in the Nowgong District of Assam.**—*Indian Med. Gaz.* 1923. July. Vol. 58. No. 7. pp. 296–299.

In a previous paper published in 1914 [this *Bulletin*, Vol. 3, p. 552] the author and ROGERS described the methods of segregation which had been uniformly successful in eradicating kala azar from the tea gardens in Nowgong. In 1916 it became evident that kala azar was again assuming epidemic form. An inspection revealed the fact that the disease was very prevalent indeed, and in 1921, on returning from leave, the author found that kala azar was again present in the estates. Since then it has spread till hardly an estate is free. The coolies who become infected are the older residents, many of whom were born during the epidemic of 1897–1902. Though the antimony treatment has done much to alleviate the sufferings and relieve the financial burden, relapses after apparent cure are by no means uncommon. Formerly each death from kala azar represented a loss of 200 rupees, while now to effect a cure entails an expenditure of but 7 or 8 rupees. This is attained in about 75 per cent. of cases and one is forced to admit a vast improvement from both the economic and health point of view. Nevertheless, there is still complete ignorance of the method of transmission of the disease and its incubation period, and until these questions are satisfactorily answered no efforts based on the present lines of control must be relaxed.

C. M. Wenyon.

NAPIER (L. E.). **The Incidence of Kala-Azar in Bengal.**—*Indian Med. Gaz.* 1923. July. Vol. 58. No. 7. pp. 299–301. [2 refs.]

An official survey carried out by the Public Health Department of Bengal resulted in a statement that there existed about 50,000 cases of kala azar in the whole of Bengal, with an annual death-rate of 10,000. From his experience at Calcutta since the treatment centre has been started, and from the figures obtained by Dr. BHATTACHARJI, who instituted a similar treatment centre at some 22 miles distance from Calcutta, it is evident that these figures under-estimate the true state of affairs. The author is convinced that the total number of cases in Bengal amongst a population of 46 millions must be between 1,518,000 and 2,668,000.

C. M. W.

i. CUNNINGHAM (J.) & VARADARAJAN (P. S.). **An Epidemiological Study of 663 Cases of Kala-Azar admitted to the Madras City Hospitals between 1913–1922.**—*Indian Med. Gaz.* 1923. July. Vol. 58. No. 7. pp. 301–306. With 1 map. [3 refs.]

ii. —— & ——. **Kala-Azar in the Madras Presidency outside Madras City.**—*Ibid.* pp. 308–311. With 1 map. [7 refs.]

i. A survey of 663 cases of kala azar admitted to Madras Hospital between 1913 and 1922 and a similar survey made by KORKE for the years 1904–11 show that there is a maximum intensity in the neighbourhood of George Town, and that this focus is surrounded by other foci which were originally regarded as places to which kala azar

cases had migrated. Cases have now been recorded in areas 6 to 7 miles south of the city, and this would appear to indicate a gradual extension of the disease since 1912.

ii. Evidence is brought forward to show that apart from Madras city itself no endemic focus of kala azar exists in Southern India. It is possible cases have originated in Trichinopoly, Ponneri, Pondicherry and Bangalore, but there is no evidence that these places are at the present time endemic foci of the disease.

C. M. W.

KNOWLES (R.), NAPIER (L. E.) & GUPTA (B. M. Das). **The Kala-Azar Transmission Problem.**—*Indian Med. Gaz.* 1923. July. Vol. 58. No. 7. pp. 321–349. With 4 plates & 2 maps. [44 refs.]

In this long article the authors review the present position of the kala azar problem in India. Very little new information is included, but the various theories which have been advanced are logically discussed. It is concluded that the parasite should be retained in the genus *Leishmania* and not in *Herpetomonas*, chiefly because it appears to be primarily a parasite of man and not of an insect. It is believed that the evidence available points to escape of the parasite by way of the blood-stream. The want of an easily-infectible laboratory animal is a serious handicap to investigators, as there is no means of demonstrating the infectivity of a possible insect vector. Attempts to infect frogs have led to a transitory visceral infection after injections into the lymph sac, but these vertebrates hold out no better promise than the ordinary laboratory animals which are infected with such difficulty and uncertainty. The bug, *Conorhinus*, in which, it is reported, development of the parasite takes place, and *Phlebotomus* are regarded as worthy of investigation from the transmission point of view. It is believed that some secondary factors, such as enteric fever, relapsing malaria and dysentery play some part in determining the onset of kala azar. There occur in inoculated animals symptomless infections which can only be detected by culture, and the question arises as to whether a similar condition may not exist in man. Though the belief is held that the parasite escapes from the blood, where it is practically invariably present, as demonstrated by the culture method, the possibility of infection by way of the mouth has still to be considered, as in one case a fatal and heavy infection was induced in a monkey by feeding it with spleen emulsion. The much discussed "thick tail" form of the flagellate phase is regarded as a result of degeneration, as similar forms have been encountered in the case of the common herpetomonad of the house-fly.

The article is a carefully reasoned summary of the kala azar situation, but it leaves the impression that its solution is still in a condition of complete obscurity. The authors deplore the fact that the financial circumstances of India to-day do not permit of a well-organized kala azar commission under unified direction.

C. M. W.

NICOLLE (Charles) & ANDERSON (Charles). **Recherches expérimentales sur le mode de transmission du kala azar.**—*Arch. Inst. Pasteur de Tunis.* 1923. July. Vol. 12. No. 2. pp. 168–198. With 2 text figs. [1 ref.]

In a series of most carefully conducted experiments the authors have attempted the transmission of kala azar from dog to dog by means of

dog fleas. The elaborate technique employed for keeping the animals free from ectoparasites and the disposition and arrangement of the cages are described in detail. The experiments were carried out at different seasons of the year and everything possible seems to have been done to avoid fallacious results. Eight dogs in all were exposed to the bites of numerous fleas which had fed upon known infected animals. The exposure to these fleas lasted from three weeks to seven months, but in no case was there transmission. It is concluded that these experiments lend no support to the view that canine kala azar is conveyed from dog to dog by the flea, *Ctenocephalus canis*. These researches, carried out with great care, afford a remarkable contrast with those conducted in Italy by BASILE, who claimed to have successfully transmitted the disease by means of fleas.

C. M. W.

ARCHIBALD (R. G.). **Kala-Azar in the Sudan with Special Reference to its Treatment by Tartar Emetic.**—*Amer. Jl. Trop. Med.* Baltimore. 1923. July. Vol. 3. No. 4. pp. 307–324. With 1 chart. [15 refs.]

This paper is a review of the present position of kala azar in the Sudan. Cases occur sporadically, and, apart from a few amongst Sudanese troops on the Abyssinian frontier in 1913 and 12 to 15 amongst troops in the Melut district, nothing like an epidemic has been known. The Sudan virus is easily inoculated to the grey and the red monkey and to the jerboa and gerbil, but dogs can be infected only by massive doses. Other animals have proved refractory. Under the heading of treatment it is shown that of 15 cases, some of which were early, treated by intravenous injection of tartar emetic on the usual lines, 13 proved fatal. The reaction to the drug appears to indicate that it is better to commence with small doses and to proceed more slowly than in the method usually advocated. The less intensive treatment has, in the hands of Colonel BIGGAR, given, even in advanced stages of the disease, very satisfactory results.

C. M. W.

BECKER (Elery R.). **Studies on the Relationship between Insect Flagellates and Leishmania.**—*Amer. Jl. Hyg.* Baltimore. 1923. July. Vol. 3. No. 4. pp. 462–468. [12 refs.]

Further attempts have been made by the author to infect laboratory animals with flagellates of invertebrates. The organisms used were *Crithidia gerridis*, *Herpetomonas muscae-domesticae* and *Crithidia melophagia* (=*Trypanosoma melophagium*). In these experiments 17 rats, 3 mice, 1 rabbit and 1 guinea-pig were employed. In no case was infection noted after direct examination of smears and culture tests. The results are thus a confirmation of those obtained by HOARE and by SHORTT [this *Bulletin*, Vol. 18, p. 185; Vol. 20, p. 784], and are strikingly different from the numerous successes claimed by FANTHAM and PORTER, and FRANCHINI. Evidence is accumulating that the results reported by these observers are not those which will usually be obtained.

C. M. W.

BLACKLOCK (B.). **The Aetiology of Kala-Azar and Tropical Sore.**—*Lancet.* 1923. Aug. 11. pp. 273–274. [12 refs.]

On two occasions the author, while sitting in the open in Freetown, was bitten on the ankle by a plant bug, *Dysdercus superstitiosus.* On each occasion an irritating swelling developed. One of these bugs was induced to bite experimentally and this was followed by extensive swelling of the leg, oedema and great itching. There was no general reaction, but the blood showed an eosinophilia. Dissection of the bugs showed that the alimentary tract and sometimes the coelomic fluid harboured Herpetomonas. It is known that in allied bugs the flagellates may occur in the salivary glands.

Flagellates of the same type occur in plants, and FRANCHINI and others claim that insect flagellates can be inoculated to vertebrates, and, further, FRANCHINI states that insect flagellates, as also leishmania, will grow in media containing plant juices. Reflecting on these observations, the author thinks that his experience with the plant bugs in West Africa affords a strong argument for the thorough investigation of the habits and bionomics of such forms before they are dismissed from consideration in connexion with kala azar and tropical sore.

C. M. W.

YAKIMOFF (W. L.). **Studi sul Kala-Azar.**—*Pediatria.* 1923. Aug. 1. Vol. 31. No. 15. pp. 811–816. [1 ref.]

During the investigations on kala azar conducted by the author in Turkestan in 1913 leishmania were found in the peripheral blood of 10 out of 23 cases. Attempts at cultivating the parasite from the peripheral blood were not successful. That of a dog heavily infected with the Tunisian strain of leishmania gave a positive result on one occasion.

Attention is drawn to what is called a new method of diagnosis. From a case of kala azar, in the peripheral blood of which no leishmania could be found, a few drops of blood were taken and injected into the caudal vein of a mouse. Four weeks later the mouse died and leishmania were found in its liver and lungs. [Infection of mice with material so poor in leishmania is contrary to all previous experience, which demonstrates that in order to produce infection at all large doses of virus must be employed.] The author draws attention to the coexistence of malarial parasites and leishmania in certain cases.

C. M. W.

SHORTT (H. E.). **The Recovery of** *Herpetomonas donovani* **from the Urine of a Kala-Azar Patient.**—*Indian Jl. Med. Res.* 1923. July. Vol. 11. No. 1. pp. 319–320. [1 ref.]

In a case of kala azar associated with oedema the author noted that the urine showed a large deposit. Sterile urine was obtained after antiseptic precautions without the use of a catheter. The centrifuged deposit was inoculated to six tubes of N.N.N. medium, in two of which cultures of leishmania were obtained. These behaved in every way like the strains of the parasite obtained from the blood.

C. M. W.

AURICCHIO (Luigi). **L'azione degli stimoli leucocitogeni nelle anemie spleniche dell' infanzia.**—*Pediatria.* 1923. Sept. 1. Vol. 31. No. 17. pp. 922–937. With 1 chart. [8 refs.]

Injections of nucleinate of sodium and adrenalin in the case of healthy children raises the leucocyte count by 3,000 with an increase in the percentage of polynuclears and the appearance of immature cells. Corresponding doses have no effect in cases of infantile kala azar. In cases of splenomegaly of tubercular origin the increase was less marked and less quickly developed than in healthy children, while in cases of splenomegaly of syphilitic origin there was an increase up to 30,000, which persisted for 2–3 days.

C. M. W.

BANERJEE (Dhirendra Nath) & SAHA (Jugal Charan). **On the Possible Function of Adrenals in Kala-Azar.**—*Calcutta Med. Jl.* 1923. Apr. Vol. 17. No. 10. pp. 145–150. [10 refs.]

In cases of known adrenal insufficiency a series of symptoms appear which clearly resemble those of kala azar. In such cases intramuscular injections of adrenalin will cause a rise in blood pressure, increase in the pulse rate and tremors of the hand and feet, together with vasc-motor reaction, palpitation, precordial pain and other symptoms. Similar tests in cases of kala azar appear to indicate that in this disease there is adrenal insufficiency, and the author suggests that the parasite may act by producing fever on the one hand and by exhausting the adrenals on the other, and that all the features of kala azar may be due to the second factor.

C. M. W.

CHATTERJEE (H.). **An Unusual Complication in Kala-Azar.**—*Indian Med. Gaz.* 1923. July. Vol. 58. No. 7. pp. 313–314.

A record of a case of kala azar in which acute symptoms suddenly supervened as a result of haemorrhage into the peritoneal cavity. The fluid was removed by tapping, an operation which had to be repeated twelve days later. The spleen was much enlarged and puncture revealed numerous leishmania. After a course of potassium antimony tartrate the patient completely recovered.

C. M. W.

SHORTT (H. E.) & SEN (Ram Taran). **Clinical Kala-Azar Work performed at the Special Kala-Azar Hospital, Shillong, during 1922.** —*Indian Med. Gaz.* 1923. July. Vol. 58. No. 7. pp. 289–293. [2 refs.]

The author explains that the type of case referred to in the paper differs in certain respects from those in other hospitals. In Assam at the present time there exist so many centres where the antimony treatment of kala azar is carried out that the cases which enter the Shillong Hospital are either the more severe ones or those which have relapsed after one or more courses of treatment elsewhere. The routine treatment adopted at the hospital previously by KNOWLES was the administration of a total of 200 cc. of a 1 per cent. solution of tartar emetic. The authors of the paper under review point out that in the majority of cases uncomplicated by other grave constitutional diseases

larger quantities can be safely given, and that if 200 cc. only is is received a considerable proportion of the cases relapse.

In this series of cases no hard and fast rule was laid down: each case was treated on its individual merits and the antimony salts treatment was pushed till symptoms of intolerance began to appear, usually in the form of pains in the joints. In most cases these signs did not occur before 2 gm. of the drug had been given, and when they did occur before this, treatment was not stopped but the dosage was increased more slowly. Intravenous injections were given on every second day, commencing in adults with 3 cc. and proceeding to a maximum of 8 cc., which was generally reached at the sixth injection. All the cases referred to had been properly diagnosed. The details of the course and treatment are arranged in tabular form. Forty-two cases were treated with sodium antimony tartrate, and of these 27 were discharged as cured, 8 died, 4 were only relieved, while the remaining three were discharged for other causes. There appeared to be no ground for supposing that any previous course of treatment had rendered the cases more resistant to the drug.

Three cases were treated with ammonium antimony tartrate supplied by BRAHMACHARI. The cases received a total of 303, 260 and 121 cc. of a 1 per cent. solution respectively and all were discharged cured. The result was in no way superior to that obtained with the sodium salt.

Another drug supplied by BRAHMACHARI was urea stibamine. The initial dose employed was 0·1 gm. dissolved in cold sterile distilled water. Each subsequent dose, given on alternate days, was increased by 0·05 gm. till a maximum of 0·25 gm. was reached. Four cases were treated with the following total dosage in grams: 1·7, 1·7, 1·7, 2·295. The results are said to be most encouraging and are actually much better than those claimed by BRAHMACHARI himself. The advantages over the antimony preparations usually employed are these: (1) The short course necessary to complete the cure—2–3 weeks. (2) The rapid disappearance of symptoms. (3) Absence of signs of intolerance.

Formalin and trypan blue injections were tried in six and two cases respectively, with apparently no good result.

An attempt was made to improve the action of the drugs employed by counteracting the acidosis of the blood. Whereas in a normal native 10 gm. of bicarbonate of soda was sufficient to render the urine slightly alkaline, in kala azar cases 25 gm. was necessary. This procedure had apparently no influence on the treatment. Some remarks are made about the method of performing spleen puncture and the formol-gel test, which was found to be very definitely positive in the majority of cases. In early kala azar and malaria cases with large numbers of parasites in the blood it may be misleading. Where spleen puncture is not possible it is a valuable aid to diagnosis.

C. M. W.

BANERJI (Dhirendra Nath). **Some Interesting Kala-Azar Cases.**—*Calcutta Med. Jl.* 1923. June. Vol. 17. No. 12. pp. 265–267.

Two cases of kala azar are described in which severe after-effects resulted from the injection of sodium antimony tartrate. In one case severe cutaneous burning sensations appeared at the end of the second day after the first dose ($\frac{1}{2}$ cc. of 2 per cent. solution). This condition

persisted till on the fifth day the patient became delirious and on the seventh day semi-comatose. There was cardiac disturbance, the heart missing beats. A condition of cancrum ani developed, but the critical condition showed signs of passing away on the fourteenth day. A month later treatment by intramuscular injections of hyperacid antimony tartrate was commenced. The treatment was well tolerated at first, but oedema associated with albumen and casts in the urine supervened and the patient died.

The second case proved very resistant to antimony treatment. There was improvement at first, but later, in spite of continued treatment, during which the form of antimony used was varied, the fever persisted. Finally, extensive cancrum oris developed. Stibenyl was then tried, but this produced severe vomiting, purging and pains all over the body. In all, five injections of stibenyl were given, when the patient returned home, where he contracted pneumonia. After being unconscious for a week he gradually recovered at the middle of 1921, and has remained in good health since.

Another case is mentioned in which injection of antimony tartrate produced severe reaction without any effect on the fever. Colloidal antimony sulphide was then given. The patient quickly responded and has remained well for the last five years. The author has noted in other cases the good effects of antimony sulphide after a preliminary course of antimony tartrate.

C. M. W.

MACKIE (F. P.) & PATNI (Hari Charan). **The Evidence of Cure in the Treatment of Kala-Azar by Antimony.**—*Indian Med. Gaz.* 1923. July. Vol. 58. No. 7. pp. 293–295.

The generally accepted full course of antimony tartrate, viz., 200 cc. of a 1 per cent. solution, is in many instances ineffective in curing cases of kala azar. The clinical signs which suggest a cure are cessation of fever, increase in weight, reduction in the size of the spleen, increase in the total leucocyte count, and the physical appearance of well-being and the loss of the epidermal signs. In treatment each case must be considered on its own merits and the drug administered till all or most of the above-mentioned criteria are evident. Even when all these are fulfilled the patient may still be harbouring living leishmania, though stained smears reveal none, so that failure to grow the parasite from spleen puncture material is the only real evidence of cure. Insufficiently cured cases are a danger in that they may act as chronic carriers.

C. M. W.

BRAHMACHARI (U. N.). **Chemotherapy of Antimonial Compounds in Kala-Azar Infection. Further Observations on the Toxicity of Antimonial Compounds—Delayed Antimony Poisoning. Part III.**—*Indian Jl. Med. Res.* 1923. July. Vol. 11. No. 1. pp. 196–213.

With a view to their possible use in the treatment of kala azar the following antimonial compounds were tested as to their toxicity on animals: Lithium antimonyl tartrate, Calcium antimonyl tartrate, Strontium antimonyl tartrate, Ethyl antimonyl tartrate, Quinine antimonyl tartrate, Cinchonine antimonyl tartrate, Narcotine antimonyl tartrate, Sb_2O_3 dissolved in glycerine and in tartaric acid.

The quinine salt is the least toxic of the series, but for the reason that the quinine is likely to bring about a dangerous fall in blood

pressure it cannot be recommended for use in kala azar. The Sb_2O_3 glycerine solution comes next, but this cannot be administered intravenously. The same oxide of antimony dissolved in tartaric acid is the basis of the author's hyperacid antimonyl tartrate which has given satisfactory results when injected intramuscularly. Old solutions of tartar emetic and old samples of stibenyl have proved to be more toxic than fresh ones. Guinea-pigs may die three weeks after one injection of an antimonial salt and show definite symptoms of antimony poisoning and presence of antimony in the viscera.

C. M. W.

JEMMA (Rocco). **Considerazioni sulla diagnosi e sulla terapia della leishmaniosi infantile.**—*Pediatria.* 1923. June 15. Vol. 31. No. 12. pp. 633–640. With 2 plates. [1 ref.]

After a long experience of infantile kala azar in Italy and patient investigation the author is convinced that the best remedy is still tartar emetic administered intravenously. Neither stibenyl nor other antimony compounds have given results which can compare with those obtained with the older remedy.

C. M. W.

CUNNINGHAM (J.) & VARADARAJAN (P. S.). **Notes on the Results of Treatment of Cases of Kala-Azar admitted to the Madras City Hospitals between 1913–1922.**—*Indian Med. Gaz.* 1923. July. Vol. 58. No. 7. pp. 307–308.

Between the years 1913 and 1922 there were admitted to the Madras hospitals 708 cases of kala azar. In the pre-antimony period there were 2·2 per cent. of cures compared with 34·7 per cent. in the later period.

C. M. W.

SHORTT (H. E.). **The Pathology of Acute Experimental Kala-Azar in Monkeys.**—*Indian Jl. Med. Res.* 1923. July. Vol. 11. No. 1. pp. 186–195. With 2 figs. & 2 plates. [5 refs.]

The pathological findings in two monkeys (*Macacus rhesus*) which acquired an acute and rapidly fatal infection after inoculation with kala azar material are described. The disease in these animals is essentially the same as in man, the infection being eventually one of the endothelial tissues, especially that of the blood vessels.

C. M. W.

BRAHMACHARI (Upendra Nath) & SEN (Parimal Bikash). **The Globulin Opacity Test for Kala-Azar.**—*Indian Med. Gaz.* 1923. July. Vol. 58. No. 7. pp. 295–296.

It was shown by the first of the authors of this paper that the addition of distilled water to the serum of kala azar patients gave a precipitation of globulins either as a diffused precipitate when the fluids were mixed, or as a ring when the one was superimposed on the other. There appears to be no doubt that the precipitate is globulin, which is responsible for the opacity which occurs in the formaldehyde test for kala azar (formol-gel test). By estimating the quantity of water-precipitable globulin present in serum the authors have succeeded in

elaborating a test which they call the *globulin opacity test.* One part of serum is mixed with six parts of distilled water. After uniform mixing the liquid is poured into a graduated (in inches) cylinder with a diameter of 1 inch. At the bottom of the cylinder are fixed some black spots and the fluid is poured in till the spots are only just visible. It was found that in kala azar a value was obtained which was fairly diagnostic of the disease. The height in inches is inversely proportional to the amount of globulin present. A reading of 1·25 inch or less may be regarded as positive.

C. M. W.

IYENGAR (K. R. K.). **Studies in the Value of the Wassermann Test. No. V. Significance and Value of a Positive Wassermann Reaction in Kala-Azar.**—*Indian Jl. Med. Res.* 1923. July. Vol. 11. No. 1. pp. 237–238. [3 refs.]

Serum from thirty cases of kala azar gave a positive Wassermann reaction in six instances. As this figure is not in excess of that obtained from an average Indian male population it can be assumed that kala azar does not lead to a positive Wassermann reaction.

C. M. W.

HARTMANN-KEPPEL (G. L.). **Un mode d'inoculation de la leishmaniose cutanée.**—*Rev. Méd. et Hyg. Trop.* 1923. July–Aug. Vol. 15. No. 4. pp. 135–138.

If the statements recorded in this paper are to be accepted as accurate they are of the utmost importance from the point of view of the etiology of Oriental sore and kala azar. The author points out that during the occupation of Syria both British and French troops were encamped round Aleppo. Amongst them there occurred only a few cases of Oriental sore, whereas in the town itself the children and visitors continued to be infected. It was concluded that bed-bugs alone could be responsible for such a difference of incidence of the disease. Accordingly the author examined bed-bugs collected from a locality in the town where the disease was common. The probosces of 87 bugs were examined and it was found that in 28 of these leishmania occurred. They occupied that part of the proboscis where the stylets arise, but not the stylets themselves. The intestine and body cavity of the bugs were free from parasites. The organisms found were ovoid in form but not longer than 0·75 to 1·0 micron. They contained a nucleus and a short centrosome usually lying near the nucleus. It is stated that cultures in N.N.N. medium were obtained by placing probosces of bugs in the water of condensation. The cultural forms were said to develop an undulating membrane.

The author also states that five cases of Oriental sore which showed enlargement of the spleen were examined by spleen puncture. In four of these malarial parasites were found, while in three leishmania occurred.

It is unfortunate that the so-called leishmania from the proboscis of the bug are not figured. The size rather suggests some other organism, while the author's remarks about the cultural forms leads one to suspect that he is not familiar with the details necessary for this kind of work. If there is any truth in his conclusions confirmation should soon be forthcoming.

C. M. W.

STANCANELLI (Pietro). **Un caso di triplice bottone di oriente al volto, di cui due dovuti probabilmente a metastasi per via linfatica.** [A case of Three-fold Oriental Sore on the Face, Two probably due to Metastasis by Lymphatics.]—*Giorn. Ital. d. Malat. Vener. e. d. Pelle.* 1923. Feb. Vol. 54. (58th Year.) pp. 37–42.

The author records a case of Oriental sore in Italy in which three lesions occurred, two of which appeared two months after the first. This suggests that the three sores were not the result of three separate inoculations, but rather that the two which appeared later were the result of dissemination of the virus by way of the lymphatics.

C. M. W.

ANDREWS (L. A.). **Three Cases of Tropical Sore.**—*Jl. Roy. Army Med. Corps.* 1923. May. Vol. 40. No. 5. pp. 371–372.

Three cases of Oriental sore, which were treated with 2 per cent. tartar emetic ointment, are described. In the first case, after the ulcer had been cleaned with fomentations, the ointment spread on lint was applied one morning and again in the evening. The second application caused considerable pain, and on the following day the appearance was not encouraging. No more antimony was used, the lesion being treated as an ordinary granulating wound. Healing was uninterrupted, the patient being discharged cured on the tenth day.

On account of the severe reaction the second case was treated with antimony ointment only once a day, for some time without effect. Two applications a day were then made till a severe local reaction occurred, after which healing took place.

The third case likewise cleared up after the ointment had produced a considerable local reaction.

C. M. W.

KENNEDY (J. C.). **Three Cases of Tropical Sore.** [Correspondence.]—*Jl. Roy. Army Med. Corps.* 1923. Aug. Vol. 41. No. 2. p. 157.

In dealing with single lesions in cases of Oriental sore tartar emetic ointment has given satisfactory results at Basra. The essence of the treatment is the production of a very considerable local reaction, which is usually achieved by a twenty-four hours' application. The patient should be forewarned of the pain which is caused. Some sloughing of the parasitized cells occurs and the subsequent cleansing and healing of the sore are assisted by simple fomentations. In the case of extensive involvement of the face, and multiple lesions, the intravenous method is to be preferred.

C. M. W.

CASTELLANI (Aldo). **Phosphorus in the Treatment of Dermal Leishmaniosis.**—*Jl. Trop. Med. & Hyg.* 1923. June 1. Vol. 26. No. 11. pp. 194–195.

As already reported [this *Bulletin*, Vol. 20, pp. 576 & 686], the author has found that injections of phosphorated oil have a marked effect on Oriental sore. Treatment is carried out by injecting 5 minims of the

oil once or twice a week in several places into the nodule itself and under the skin around its periphery. Four cases have been treated by this method, with very satisfactory results. It is again emphasized that the oil should be of recent preparation.

C. M. W.

ZENIN (A.). **Zur Frage der ärztlichen Behandlung der Haut-Leischmaniose.** [Medical Treatment of Leishmaniasis of the Skin.]—*Rev. Microbiol. et Epidémiol.* Saratov. 1923. Vol. 2. No. 1–2. In Russian, pp. 21–23. Abridged Version in German, pp. 88–89.

Having under observation a case of Oriental sore with seven lesions, the author tried various lines of treatment. To one sore were applied compresses of aqueous salvarsan solution for 26 days without result, while another was sprinkled with powdered permanganate of potash for 30 days, also without result. Another sore was excised. The wound healed completely. Two intravenous injections of salvarsan were followed in 20 days by almost complete healing of all the sores. It is concluded that surgical measures, though giving good results, are not always applicable. Salvarsan, however, is a specific and should be generally used. [Such good results with salvarsan are not usually obtained, and it is evidently unsafe to make generalizations from a single case of Oriental sore, a disease in which unexpected spontaneous healing often occurs.]

C. M. W.

i. D'ASTROS, GIRAUD (P.) & RAYBAUD (J.). **Quatre cas autochtones de kala-azar infantile observés à Marseille.**—*Bull. Acad. Méd.* Paris. 1923. July 31. Year 87. 3rd Ser. Vol. 90. No. 31. pp. 114–118.

ii. JEMMA (R.). **Leishmaniosis infantum. (Innere Leishmaniose, Leishmansche Anämie, Kala-azar.)**—*Ergebnisse der inneren Medizin und Kinderheilkunde.* 1923. Vol. 23. pp. 595–647. With 8 text figs. [642 refs.]

iii. NEEB (H. M.). **A Serious Case of Infantile Leishmaniosis cured by Intravenous Injections of Tartras-Kalico-Stibicus** (émétique).—*Trans. 4th Congress of the Far Eastern Assoc. of Trop. Med.* 1921. Vol. 2. pp. 274–282. With 6 Charts.

iv. BRAHMACHARI (U. N.). **Dermal Leishmanoid.**—*Jl. Trop. Med. & Hyg.* 1923. June 1. Vol. 26. No. 11. pp. 182–183.

i. During the past six months four cases of infantile kala azar have been seen by the authors in Marseilles, all in children who had never left the town or its environs. There was nothing peculiar about the cases, which were all diagnosed by spleen puncture.

ii. A general account of infantile kala azar. The author, who has had an extensive experience in Italy, gives, as was to be expected, a thoroughly up-to-date account of the disease in all its aspects.

iii. A record of a case of kala azar in a child seven years of age who had come to Batavia after having contracted kala azar either in Calcutta or Persia. Diagnosis was made by discovery of the parasite and its successful culture. Treatment with intravenous injections of tartar emetic resulted in complete recovery.

iv. The case described in this paper, of a man who developed an extensive cutaneous eruption in which leishmania were found after he had been treated for kala azar, has already been dealt with [this *Bulletin*, Vol. 19, p. 551].

C. M. W.

i. SERGENT (Etienne). **Chronique du bouton d'Orient en Algérie. Un nouveau cas sur le littoral.**—*Arch. Instituts Pasteur de l'Afrique du Nord.* 1923. May. Vol. 3. No. 2. p. 159. [1 ref.]

PIQUEMAL (M.). **Le bouton d'Orient aux Ouled Djellal.**—*Ibid.* pp. 160–163.

BIDAULT (R.). **Un foyer de bouton d'Orient dans les oasis du Souf (Sahara Constantinois).**—*Ibid.* pp. 164–168. With 7 figs. [5 refs.]

ii. VON SCHROETTER (Hermann). **Zur Kenntnis der Leishmaniosis cutanea, der sogenannten Orientbeule.**—*Arch. f. Schiffs- u. Trop.-Hyg.* 1923. Vol. 27. No. 7. pp. 234–246. With 5 plates containing 21 figs. [3 refs.]

iii. BEHDJET (Houloussi). **Die Behandlung der Orientbeule mit Diathermie.** —*Dermat. Woch.* 1923. May. 19. No. 20. pp. 433–438.

i. In Algeria Oriental sore is of rare occurrence outside the Sahara oases. Hitherto only three properly diagnosed cases have been recorded. A fourth has now been encountered and forms the subject of this note.

At Ouled Djellal, 90 kilometres south-west of Biskra, has been found an endemic focus of Oriental sore, four properly diagnosed cases of which are recorded.

The Souf oasis, which lies 220 kilometres south-east of Biskra, proves to be an endemic focus of Oriental sore, and the author records six cases, in five of which leishmania were found.

ii. A general account of Oriental sore based on observations made in 1917 in Syria and Mesopotamia. No new information is given, but the author states that he obtained evidence that Phlebotomus was probably the vector of Jericho boil.

iii. Three cases of Oriental sore, which were treated by diathermy are described. From the results obtained in this limited series of cases the author concludes that diathermy is the ideal method of treatment.

C. M. W.

RELAPSING FEVERS AND OTHER SPIROCHAETOSES.

DUNN (Lawrence H.). **The Tropical Bedbug in relation to the Transmission of Relapsing Fever in Panama.**—*Amer. Jl. Trop. Med.* Baltimore. 1923. July. Vol. 3. No. 4. pp. 345–350.

Employing the Panama strain of the relapsing fever spirochaete, the author attempted to transmit the organism to a rat and two monkeys by means of bed-bugs fed either on an infected human being or rat. Twenty-four hours was the shortest interval between the feeds on the infected and uninfected animals. In the first experiment on a rat 50 bugs were employed, and these inflicted 704 bites on the animal between the third and eighth day of the experiment. In the second experiment (monkey) 56 bugs inflicted 106 bites on the second and third day, while in the third experiment 8 bugs inflicted 40 bites on a monkey on the thirty-fifth and thirty-sixth day. In no case did an infection result. Macerated bed-bugs which had ingested spirochaetes 32 days before produced infection when injected into animals, while the coelomic fluid of bugs was found to harbour spirochaetes 15 days after feeding.

C. M. Wenyon.

MOSELLI. **Observations sur la fièvre récurrente au Soudan.**—*Bull. Soc. Path. Exot.* 1923. Apr. 11. Vol. 16. No. 4. p. 272.

By the method of triple centrifugation of 10 cc. of blood the author has been able to demonstrate the presence of scanty spirochaetes in the blood of a relapsing fever case in the interval between two attacks of fever. Injections of trepol have in most cases been efficacious in preventing relapses, but the fever does not subside for a couple of days.

C. M. W.

ZLATOGOROFF. **Zur Erkennung des Rückfallfiebers.** [Diagnosis of R.F.]—*Deut. Med. Woch.* 1923. July 27. Vol. 49. No. 30. pp. 973–974.

As there was considerable difficulty in arriving at a diagnosis in certain cases of relapsing fever, the author has attempted to elaborate a complement-fixation test. After some experiment it was found that an antigen prepared from the spleens of infected mice gave the best results. Of 18 cases tested during the febrile period 16 gave a definitely positive result, while of 50 during the afebrile period 42 were positive. No positive result was obtained in other than relapsing fever infections. A cutaneous test was also made. Blood from the vein of a heavily infected case was diluted with 2-3 volumes of distilled water and kept in the incubator for five days. The liquid was centrifuged and the deposit incubated at 58° C. for 30 minutes. This antigen was used for cutaneous inoculation according to PIRQUET's method. In six cases tested during the febrile period there was no reaction, while a positive reaction was obtained in 25 of 26 cases tested during the afebrile period. Normal human blood which had been treated in the same way was used as a control. The complement-fixation test has given a positive result as long as six weeks, and the cutaneous test two weeks, after the last relapse.

C. M. W.

BLANCHARD & LEFROU (G.). **Une erreur de diagnostic : fièvre récourrente à manifestation méningée, prise pour maladie du sommeil.**—*Bull. Soc. Path. Exot.* 1923. June 13. Vol. 16. No. 6. pp. 394–395. [2 refs.]

Attention is called to an error in diagnosis which resulted from the acceptance of the statement of an experienced laboratory assistant. The blood of a native in the Congo was examined by this man, who noted a movement amongst certain red blood corpuscles. He concluded that this was due to a trypanosome. A lumbar puncture appeared to confirm the diagnosis of trypanosomiasis and the patient was treated with atoxyl. During the treatment the patient's blood was examined by the centrifugation method, with the result that the only parasites discovered were spirochaetes of the recurrent type. It is evident, therefore, that even in a laboratory where men experienced in the diagnosis of trypanosomiasis are employed such errors may arise unless caution is exercised, while the case examined serves to illustrate how natives frequently fail to show the characteristic symptoms of the disease from which they are suffering and how in relapsing fever the cerebrospinal fluid, in regard to hyperleucocytosis and hyperalbuminosis, may simulate that from cases of sleeping sickness.

C. M. W.

CATANEI (A.). **Infection sanguine à spirochètes, de longue durée, sans symptômes apparents, chez des enfants indigènes algériens.**—*Bull. Soc. Path. Exot.* 1923. June 13. Vol. 16. No. 6. pp. 392–394.

During the course of a malarial survey in Algeria five children of one family were examined. Spirochaetes of the relapsing fever type were found in blood films from four. In two spirochaetes were again found 54 days later, and in one 98 days after the first examination.

SERGENT and FOLEY have informed the writer that they had under observation an Arab child which during a period of 66 days suffered from relapsing fever with four relapses.

It is evident the disease is sometimes of long duration, and that during the relapses, which may be of a very mild nature, it may escape detection entirely.

C. M. W.

YAKIMOFF (W. L.) & SOLOWZOFF (A. S.). **Essais de traitement de la fièvre récurrente par l'émétique.**—*Bull. Soc. Path. Exot.* 1923. May 9. Vol. 16. No. 5. pp. 303–304. [2 refs.]

Owing to the difficulty of obtaining salvarsan in Russia the authors were led to attempt the treatment of relapsing fever with tartar emetic in view of a statement made by CASTELLANI that in Macedonia this drug, though inferior in its action to salvarsan, appeared to have the property of preventing relapses [this *Bulletin*, Vol. 9, p. 258]. The authors injected intravenously a 1 per cent. solution. A dose of 4 cc. appeared to have no action, so this was increased up to 18 cc. In this dose the drug seemed to bring about the crisis within a few hours or next day, but did not prevent the relapses. The authors agree that its action is very inferior to that of salvarsan, but hesitate to state that it has no action at all.

C. M. W.

PLETNEW (D.). **Ueber die Anwendung von "1882" bei Rekurrens.**—[The Employment of "1882" in R.F.]—*Deut. Med. Woch.* 1923. May 25. Vol. 49. No. 21. pp. 671–672.

The author has investigated the action in cases of relapsing fever and malaria of the preparation "1882," which, according to Professor KOLLE, is a 10 per cent. solution of an arsenobenzol derivative. For a single dose 12–15 cc. are injected, presumably intravenously, as he compares its action with that of "606" and "914." The drug appears to be a specific for relapsing fever, which in the great majority of cases is immediately cured. It was tested also on two cases of malaria which had been refractory to quinine. One of these in particular had proved very resistant. After a single injection of "1882" followed by further quinine treatment there were no attacks of fever during the two and a half months the patient was under observation.

C. M. W.

ANDING (Curt Emil). **Ueber die Wirkung des Arsenpräparates "Arsalyt" bei Febris recurrens.** [The Action of "Arsalyt" in R.F.]—*Deut. Med. Woch.* 1923. Aug. 31. Vol. 49. No. 35. pp. 1150–1151. [19 refs.]

The author's experience of relapsing fever in Odessa has shown that "Arsalyt" (dimethylaminotetraaminoarsenobenzol) with its 26·5 per cent. arsenic content is a specific against the disease. The drug is put up in ampoule form, and in intravenous doses of 8–10 cc. for a man, 6–8 cc. for a woman and 1–3 cc. for a child it brings about a *Therapia sterilisans magna.* It acts quickly, has no unpleasant after-effects, does not upset the heart, and is not irritating to the kidneys even in cases of acute nephritis.

C. M. W.

DARGEIN & PLAZY. **Traitement de la Bronchite sanglante.**—*Arch. Méd. et Pharm. Nav.* 1922. Nov.–Dec. Vol. 112. No. 6. pp. 478–482. [9 refs.]

Three cases of bronchial spirochaetosis are described. It is evident from the multiplicity of remedies which have been advocated that none of them is very efficacious. In one of the three cases three courses of intravenous injections of novarsenobenzol failed to cure the condition, though the general health and weight of the patient were improved; he left hospital still coughing up blood-stained sputum. The two other cases were treated with intramuscular injections of lipoidol: there was rapid improvement and the patients were discharged cured.

The authors mention observations made by VIOLLE (*C. R. Soc. Biol.*, 22nd October 1921), which indicated that the spirochaetes originate in the soil and infect man by way of fresh fruit and vegetables.

C. M. W.

DJÉMIL (Saïd). **Remarques sur la spirochétose intestinale à Constantinople.**—*Bull. Sanitaire de Constantinople.* 1923. June. Nos. 15 & 16. pp. 139–141. [4 refs.]

From observations on the presence of spirochaetes in the faeces of human beings suffering from diarrhoea or amoebic dysentery the author is led to suspect that in Constantinople as in other places there is a seasonal incidence of the infection. A much higher percentage were

found infected during the period July to September than in that from October to February. Some remarks are made about the character of the stools in the purely spirochaetal cases and those in which amoebae occurred also. In certain purely spirochaetal cases the organisms disappeared after the use of salines. In one resistant case the infection was eradicated by the intravenous injection of salvarsan. In cases associated with the presence of amoebae emetine caused the disappearance of both parasites as a rule ; in one refractory case salvarsan treatment gave the desired result.

C. M. W.

DELAMARE (G.) & ALALOU. **Fréquence et périodicité de l'excrétion des spirochètes fécaux.**—*Bull. Sanitaire de Constantinople.* 1923. May. Nos. 13 & 14. pp. 119–122. With 1 graph. [3 refs.]

The presence of spirochaetes in the faeces of human beings shows a seasonal incidence which reaches a maximum in the aestivo-autumnal period of the year. In individual cases subjected to repeated examinations it was found that the number of spirochaetes present exhibited marked fluctuations.

C. M. W.

RAT-BITE FEVER.

PELLEGRINI (Augusto). **Il Sodoku in Italia.**—*Riforma Med.* 1923. Apr. 16. Vol. 39. No. 16. pp. 363–371.

Having had under observation three cases of rat-bite fever the author gives a full account of the disease as it is known to occur in Italy. He describes his three cases together with three others of which he obtained the notes. He reviews the previous records of the disease in Italy and finds that 23 other cases have been described, in 5 of which the causative organism was discovered. In none of the 6 cases noted by him was the spirochaete seen. The incubation period varied from 7 to 28 days while the disease persisted from two months to two and a half years. The symptoms and treatment are described in detail. Salvarsan injections have given the best results, while the local lesion has been successfully treated with radium.

C. M. Wenyon.

WALCH (E. W.). **Twee gevallen van Rattebeetziekte.** [Two Cases of Rat-Bite Fever].—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1923. Vol. 63. No. 2. pp. 239–259. With 7 figs. [English summary, pp. 259–260.] [13 refs.]

This paper, which is illustrated with instructive temperature charts and photographs of the papular eruption on the face, chest and back, describes two cases of rat-bite fever from which the typical spirochaete was isolated. It was found in small numbers in the blood of both cases and in the papules of one. Guinea pigs were infected from the blood of one of the cases and the strain of spirochaete was passed through three animals. The animals showed an incubation period of 12–15 days and, apart from a slight elevation of temperature and loss of hair, there was no sign of illness.

C. M. W.

DELAMARE (G.) & MOUCHET (A.). **Examen histologique de la cicatrice cutanée, d'un tronc lymphatique at d'un ganglion dans un cas de sodoku.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1923. June 14. Year 39. 3rd Ser. No. 20. pp. 845–847.

In a case of rat-bite fever the authors were able to excise from the arm a portion of the cicatrix from the site of the rat bite, a piece of the main lymphatic vessel and a lymphatic gland. They describe in detail the histological abnormalities of these tissues. Not only are the lymphatic vessels and glands altered in structure but also the smaller blood vessels. The lumen of the lymphatic vessel was still open though the endothelial lining was replaced by elongate connective tissue cells; its wall was infiltrated with lymphocytes and numerous haemorrhages occurred. The capsule of the gland was sclerosed and beneath it were many haemorrhagic areas. The blood vessels were altered in appearance. The main feature of the tissues examined was a marked lymphoid reaction without necrosis.

C. M. W.

PARMANAND (M. J.) **Rat-Bite Fever with Special Reference to its Aetiological Agent. (Preliminary Communication).**—*Indian Jl. Med. Res.* 1923. July. Vol. 11, No. 1. pp. 181–185. With 2 charts and 1 plate. [2 refs.]

An investigation of four cases of rat-bite fever reveals some new facts regarding the causative organism of the disease as it occurs in Bombay. In the main the author's observations are a confirmation of those of ROW [see this *Bulletin* Vol. 12, p. 217]. who was the first to study rat-bite fever and its causative organism in this country. ROW, however, failed to demonstrate the flagella and was inclined to regard the organism as distinct from *Spirochaeta morsus muris* of Japanese writers. He proposed to call it *Spirochaeta petit.* The author of the paper under review has been able to demonstrate the terminal flagella, so that there appears to be little reason to regard the Bombay spirochaete as a distinct organism.

C. M. W.

POWELL (Arthur) & BANA (F. D.). **Treatment of Rat-Bite Fever with Injections of Cacodylate of Soda.**—*Indian Med. Gaz.* 1918. Oct. Vol. 53. pp. 376–377. [Received June, 1923.]

A case of rat-bite fever in Bombay resulting from a bite on the chest was successfully treated with injections of cacodylate of soda. In all, three subcutaneous injections (1·8, 2·4, and 3·0 grains) were given, on July 27, 29 and 31. The patient, who had a large sloughing ulcer at the site of the bite and swollen axillary glands together with fever and general ill health, rapidly improved. The ulcer had completely healed in a fortnight after the last injection. Dr. ROW discovered the causative organism in the blood of guinea pigs inoculated from this case. Powell states that he had seen considerable improvement in other cases after the use of cacodylate of soda, which is much cheaper and more easily administered than salvarsan.

C. M. W.

SPAAR (Eric C.) **Two Cases of Rat-Bite Fever. Rapid Cure by the Intravenous Injection of Neosalvarsan.**—*Jl. Trop. Med. & Hyg.* 1923. July 16. Vol. 26. No. 14. pp. 239–243. With 2 charts in text. [13 refs.]

A record of two cases of rat-bite fever from Colombo.

C. M. W.

YELLOW FEVER.

HOUILLON & BAUVALLET. **Rapport sur l'épidémie de fièvre jaune à Grand-Bassam (18 août au 8 septembre 1922).**—*Ann. de Méd. et de Pharm. Colon.* Paris. 1923. Jan.–Feb.–Mar.–Apr. Vol. 21, No. 1. pp. 42–52.

The importation from the Gold Coast of a case of yellow fever resulted in an outbreak in which five cases of the disease occurred at Bassam. Stringent sanitary measures were adopted and these prevented a further development of the epidemic. When the diagnosis was determined 140 Europeans out of a total of about 200 who resided there were given a dose of NOGUCHI's vaccine. Six days later 131 of these received a second dose. Of the five cases, all of which were treated with NOGUCHI's serum, three died. One of the residents who had received a single dose of vaccine was taken ill with fever and vomiting. The case was immediately treated with serum and a rapid recovery resulted. A guinea pig inoculated from one of the cases died on the seventh day. There was no marked jaundice of the skin but the muscles had a sub-icteric tinge. The lungs were markedly congested and the kidneys revealed small haemorrhagic areas. The urine in the bladder contained a large quantity of albumen. Facilities for discovering the leptospira were not available.

C. M. Wenyon.

STÉVENEL. **Spirochétose ressemblant cliniquement à la fièvre jaune observée dans la Haute Côte d'Ivoire.**—*Bull. Soc. Path. Exot.* 1923. Apr. 11. Vol. 16. No. 4. pp. 238—241.

The author describes a disease which exists in endemic form in the Ivory Coast and resembles yellow fever in many respects. He does not believe that it is Weil's disease, owing to the fact that he failed to infect guinea pigs with the urine of convalescent cases. An organism resembling NOGUCHI's *Leptospira icteroides* was discovered in the blood but owing to the fact that Stegomyia was either entirely absent or present in exceedingly small numbers in the localities where the cases occurred the author seems to think that some other vector must be responsible. A thorough investigation is required.

C. M. W.

GROVAS (Pedro Perez). **Serological Reactions in Yellow Fever.**—*Amer. Jl. Trop. Med.* 1923. July. Vol. 3. No. 4. pp. 325–334. [8 refs.]

The author has had an opportunity of investigating certain serological reactions in cases of yellow fever at Vera Cruz with a view to determining the earliest appearance of antibodies in the blood. Agglutination experiments were conducted by using cultures of *Leptospira icteroides* in the rabbit serum Ringer medium of MARTIN and PETTIT in which the organisms were uniformly distributed. The serum to be tested was diluted with 49 times its volume of isotonic salt solution and one part of this mixture was added to one part of the culture. The agglutination phenomenon, which was often accompanied by lysis, was observed by means of the dark-field microscope. The serum of 183 cases of yellow fever, together with serum from 17 cases of

other diseases and 23 normal individuals, was tested, and it was found that the serum of yellow fever cases acquires definite and easily detected agglutinins by the beginning of the second week of the illness. The control sera gave uniformly negative results. The serum from recently vaccinated persons usually gave a positive result.

Pfeiffer's reaction was tested by inoculating guinea pigs intraperitoneally with a mixture of 0·25 cc. of serum and 2 cc. of culture. The peritoneal fluid was withdrawn by means of a pipette every half hour for two or three hours and examined with the dark field microscope. In positive cases no motile organisms were found at the end of one and a half to two hours. The result was constantly positive in the case of 17 convalescents from yellow fever. In one case tested on the eighth day of the illness the reaction was negative.

With the use of an antigen prepared from cultures of *Leptospira icteroides* in fluid media the complement fixation test gave unsatisfactory results. It appears to be subject to numerous sources of error which deprive it of all practical usefulness. On the other hand the ease with which the agglutination reaction is carried out, and its precision, makes it a suitable one for diagnostic purposes.

C. M. W.

VOMELA (Stanislav). **Ueber die Spirochaetenaetiologie der akuten Exantheme I. (Akute Exantheme und die Gelbfiebergruppe.)**—*Bibliothèque Microbiol. Tchéco-Slovaque.* 1923. T. 2. 14 pp. [10 refs.]

——. **Ueber die Spirochaetenaetiologie der akuten Exantheme II.**—*Ibid.* T. 3. 13 pp. With 3 charts.

In this discussion of the etiology of the various exanthemata the author expounds what appears to be a new point of view. He regards all these diseases, including yellow fever, Weil's disease, dengue and sand-fly fever, as fundamentally similar. Those in which the etiology is as yet unknown are connected with the yellow fever group by dengue and sand-fly fever. It is the author's belief that spirochaetes will be found to be the cause of all these diseases and that the various problematic structures which have been found associated with smallpox, scarlet fever, typhus and other diseases probably represent some stage in the development of spirochaetes. In order fully to appreciate the thesis it is necessary to read the article in its entirety.

C. M. W.

INFECTIOUS JAUNDICE.

SCHUEFFNER (W.) & SNIJDERS (E. P.). **A Case of Spirochaetosis icterohaemoglobinurica.**—*Trans. 4th Congress of the Far Eastern Assoc. of Trop. Med.* 1921. Vol. 2. p. 295. With 1 plate.

This paper is a short note on the case of blackwater fever showing numerous leptospira in the blood and organs, which was described more fully elsewhere (this *Bulletin*, Vol. 13, p. 300). The patient died in 24 hours in a condition typical of blackwater fever. A few benign tertian malarial parasites were found in the blood and in addition large numbers of spirochaetes—as many as 3·6 millions per cubic centimeter of blood. After death the organs, especially the kidneys, liver and spleen were found to be heavily infected. Guinea pigs inoculated intraperitoneally with 1 cc. of blood failed to become infected.

In this note no mention is made of any name for the spirochaete, but in the papers previously reviewed (*loc. cit.*) the name *Spirochaeta icterohaemoglobinurica* is suggested. In the English version which accompanies the second of these papers the name is spelt *Spirochaeta icterohaemoglobinuria*, while MESNIL, in his review in the *Bulletin de l'Institut Pasteur*, Vol. XVII, p. 296, gives it as *S. icterohemoglobinuriae*, and this is the form in which BLANCHARD and LEFROU, who claim to have discovered a similar organism, called by them *S. biliohemoglobinuriae*, in cases of blackwater fever in the Congo, refer to it (see this *Bulletin*, Vol. 20, pp. 138 and 202).

C. M. Wenyon.

VAN DE VELDE (E.). **Bloedspirochaeten bij Koortsen en Spirochaetosis ictero-haemorrhagica.** [Spirochaetes in Blood in Icterohaemorrhagic Spirochaetosis].—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1923. Vol. 63. No. 2. pp. 169–203. With 5 charts and 13 figs. [19 refs.] [English summary, p. 204.]

Apart from the atypical case recorded by SCHÜFFNER (above) no cases of Weil's disease appear to have been reported in Asia outside Japan. The author now gives an account of four cases seen by him in Batavia. The diagnosis was confirmed by discovery of the organism in the blood and urine of the cases and by their successful culture and inoculation into guinea pigs.

C. M. W.

KOUWENAAR (W.). **Over een epidemie van koortsen zonder en met icterus, veroorzaakt door een Leptospira.** [On an Epidemic of Fever with and without Jaundice, caused by a Leptospira.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1923. Vol. 63. No. 2. pp. 225–233. With 11 charts. [1 ref.]

Kouwenaar reports on an epidemic (164 cases) of a fever which he assigns to the dengue group, though it shows few typical features. It was sometimes accompanied by nephritis (24 cases), sometimes by jaundice (21 cases). Nearly regularly there was albuminuria and a slight leucocytosis. From his hospital records the author demonstrates the endemicity of this desease in his area (tobacco estates). The endemic from time to time increases to small local epidemics.

The writer tested the urine sediment of 64 of his patients for the presence of leptospira, with positive results in 43 cases. Generally the parasites appeared on 1 or 2 days during the fall of the temperature and again for a few days from the 13th or 14th day of convalescence. Guinea pigs injected with urine containing leptospira or with a culture of the same guinea pigs died with symptoms exactly similar to those found in guinea pigs experimentally infected with Weil's disease.

Whether the disease under report is aetiologically identical with Weil's disease the author thinks can be decided only by immunologic methods.

W. J. Bais.

VANNI (V.). **Sulla morfologia e riproduzione della** *Spirochaeta icterohaemorragiae* **di Inada e Ido.**—*Policlinico.* Sez. Med. 1923. July 1. Vol. 30. No. 7. pp. 330–336. With 4 figs. [11 refs.]

The doctrine that spirochaetes are protozoa allied to the trypanosomes was first enunciated by SCHAUDINN. For a time many observers followed him in this view but careful investigations have shown it to be

quite untenable so that in recent years it has been universally abandoned. The writer of the paper under review has studied *Leptospira icterohaemorrhagiae* both by dark ground illumination and by various staining methods and has convinced himself that the organisms have fundamentally the same structure as trypanosomes. The body is often dotted over with granules which have a certain affinity for stains. These are regarded as mucoid in nature. Apart from these there occur a terminal granule and a collection of central granules which are actually within the spirochaete. The former, the author states, he has observed to divide under the dark field, and as the two portions separate from one another longitudinal splitting of the spirochaete takes place till finally longitudinal division is completed. A figure is given comparing this division with that of a trypanosome. [The author's statements are very definite but in view of the fact that many competent observers who have made a special study of spirochaetal organisms have failed to observe what he describes, one hesitates to accept his conclusions without further and more convincing evidence. The appearance of terminal blepharoplast, central nucleus and longitudinal division are capable of other interpretations.]

C. M. W.

NOGUCHI (Hideyo). **Leptospiras, Pathogenic and Non-Pathogenic. Together with Some Observations on the Spirochetal Flora of Stagnant Fresh and Salt Water and the Mammalian Stomach.**—*New York State Jl. of Med.* 1922. Vol. 22. No. 9. pp. 426–427. With 5 plates. [1 ref.]

The paper, which is illustrated by a series of microphotographs, describes certain spiral organisms which the author has studied in water and in the gastric mucosa of various animals. Both fresh and salt water contain leptospiras indistinguishable from those producing disease in man. Owing to certain differences in size more than one species may be represented. Pure cultures of these have not been obtained and the organisms have not proved to be pathogenic to guinea pigs. [It may be noted that ZUELZER (this *Bulletin*, Vol. 20, p. 143) has shown that the cultures of one strain of a similar aquatic organism were pathogenic to guinea pigs]. Other spiral organisms of the *plicatilis*, *buccalis*, *refringens*, *macrodentium* and *microdentium* types were seen in water, as well as several spirilla and *Spirillum undulans* (*loc. cit.*, p. 129).

HOFFMANN in Germany found a small organism called by him *Leptospira dentium* in dental deposits of men but the author has been unable to find this organism in the human mouth. On the other hand he has found a small form (*L. bovis* n.sp.) in the gastric mucosa of the ox. A number of spirochaetes of the *microdentium* type were found in the stomach of the sheep, ox and cat by Dr. CROSS. The author's genus *Leptospira* is defined as including actively motile organisms which appear as delicate, flexible, tapering filaments, so clearly and regularly coiled as to resemble a rope with a tendency to bending of one or both ends. No terminal flagella have been demonstrated with satisfaction nor has the terminal granule which some authors describe been seen. In certain preparations stained by Miss TILDEN the appearance of numerous peritrichal flagella was obtained and in view of the characteristic movement it is not improbable that the organisms are provided with flagella. The leptospira resists the action of 10 per cent. saponin.

C. M. W.

i. Passey (R. D.) & Ryle (J. A.). *Leptospira icterohaemorrhagiae* **in Surrey Rats with Notes of a Probable Case of Spirochaetal Jaundice from the District.**—*Guy's Hosp. Repts.* 1923. Jan. Vol. 73. (Vol. 3. 4th Ser.). No. 1. pp. 31–36. With 2 charts. [11 refs.]

ii. Kasai (Katsuya). [**On Spirochaeta Icterohemorrhagia, Which was Demonstrated in the Mouse.**]—*Saikingaku Zasshi* (*Jl. of Bact.*) 1922. Dec. No. 327. [Summarized in *Japan Med. World.* Tokyo. 1923. Apr. 15. Vol. 3. No. 4. p. 85.]

i. A case of what appears to be Weil's disease contracted in Guildford is described. The organism was not isolated from the case but an emulsion of the kidneys of three wild rats from this locality gave rise to infection in guinea pigs, and this fact, together with evidence obtained that the patient had been near a hen house which was overrun by rats, tends to support the diagnosis.

ii. A record of the isolation of *Spirochaeta icterohaemorrhagiae* from white rats in the Bacteriological Institute of Michigan University.

C. M. W.

REVIEW OF RECENT ARTICLES ON PELLAGRA.

As is usual in all papers dealing with the subject of pellagra, the question of aetiology holds first place. The present series of articles is no exception to this. It would appear that there is a tendency for the food deficiency hypothesis to be less completely satisfying than formerly, and even among its followers the rôle of protein deficiency, as opposed to all other forms of food deficiency, is not put forward in quite the same optimistic spirit.

Once again McNeal (1) pleads the case for the infection theory of the disease. An account is given of the work of the various pellagra commissions in America, the results of which have already been stated in this *Bulletin*. Attention is drawn to recent outbreaks, with particular reference to those in which doubt was thrown upon the adequacy of the food deficiency theory. It will be agreed, as McNeal points out, that it is remarkable, considering the terrible food conditions in certain European countries both during and after the war, that pellagra is so rare in these communities. The author concludes his article with the following arresting remarks: "If the intelligent use of sanitary privies will prevent the spread of this disease to new victims, then the means of its final eradication is in our hands. To me this appears already to be established as a fact. Indeed, one may perhaps be permitted to say that the study of pellagra has now reached a stage comparable to the study of yellow fever in 1900, a stage when only the advent of a bacteriological genius, such as Noguchi, will be required to identify the microbic cause of the disease." A most animated discussion followed, in which some of the most experienced observers of pellagra in America took part, and it is obvious from their remarks that the infection theory does not raise so much opposition as formerly.

The work of Jobling and Arnold (2) supports the infection theory. About the year 1910 four different observers, Hausmann, Lode, Horbaczewski and Raubitschek, independently, put forward the suggestion that pellagra might be a photodynamic intoxication. That such sensitization does occur is evidenced by the work of Meyer Betz, who, after he had inoculated himself with haematoporphyrin, found that the parts exposed to sunlight became covered with an erythematous rash with oedema. All the older experiments, however, were made with the object of discovering photodynamic substances in corn. Jobling and Arnold conducted their researches in Nashville and Memphis during the years 1919 to 1922 inclusive. The number of pellagra cases, however, diminished so rapidly that the authors were forced to discontinue their work and to give such results as had been so far obtained. Attempts were made in the first place to extract photodynamic substances from the urine and faeces of pellagrins but without success. Next, search was made in the faeces for fungi capable of producing such photodynamic substances. In time, with improved technique, positive results were obtained. The medium used was that advised by Currie (*Jl. Biol. Chem.* July 1917).

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(1) Macneal (W. J.). The Infectious Theory of Pellagra.—*Southern Med. Jl.* 1922. Nov. Vol. 15. No. 11. pp. 899–902. (Discussion, pp. 902–906.)

(2) Jobling (James W.) and Arnold (Lloyd). Observations and Reflections on the Etiology of Pellagra.—*Jl. Amer. Med. Assoc.* 1923. Feb. 10. Vol. 80. No. 6. pp. 365–368. With 3 figs. [22 refs.]

On this plate cultures were made and the colonies removed to test tubes containing Currie's medium to which had been added 3 per cent. Pot. Iodide, 1 per cent. starch, and 2 per cent. agar. When these tubes were placed in bright light, blue colonies, due to the formation of oxalic acid, appeared if photodynamic substances were present. In this way fluorescent cultures were produced and their effects studied. During the summers of 1921 and 1922, strains of fungi reacting in this way were isolated from the faeces in five of nine acute cases, in one of six subacute cases, and in two of twenty-three chronic cases. Fifty non-pellagrous persons were used as controls with negative results in every case. The fungus apparently belongs to the Aspergillus glaucus repens group. " When a series of mice was inoculated, those exposed to the light soon developed oedema and reddening of the ears, and swelling and oedema of the eyelids. In a few experiments death quickly followed exposure to sunlight. If the inoculations were continued daily, with repeated exposure to bright light, the ears became gangrenous and dropped off, the tail became rough and scaly, and there was some loss of hair from the face and head." Attempts were also made to infect the animals by feeding, but without success. Jobling and Arnold do not agree that in all pellagrous persons the diet has been insufficient in protein, but they do think that excess of carbohydrate has been consumed. Apparently the growth of these photodynamic fungi is inhibited by protein and increased by carbohydrate.

Babes (3) has also worked along the same lines as Jobling and Arnold. While admitting the harmful effect of the sun's rays upon white mice fed with maize, he does not think that exposure to light is the cause of pellagra. In man, intense exposure to sunlight produces only the skin manifestations of pellagra and these only in persons already suffering from the disease. That the presence or absence of pigment in the skin plays no part in the production of pellagrous symptoms he thinks is evidenced by the fact that many white domestic animals are fed upon maize without evil results and that the dark skin of the coloured races does not render them immune to pellagra, The pigment produced in the skin of pellagrins as a result of the disease does not act as a defensive mechanism against the sun's rays.

Let us now turn to the articles dealing with the food deficiency hypothesis. Hindhede (4) does not think that pellagra is due to the absence of protein in the diet, and he attempts to show that protein in potatoes, bread, meat and milk has the same biological value He bases his disagreement with the protein deficiency theory on statistics gained from an analysis of the diet of many countries, and upon human feeding experiments. As an example of the latter the following experiment is of interest: One of Hindhede's assistants lived for one year on potatoes and margarine ; for six months on whole rye bread, margarine, prunes, sugar and starch ; for six months on barley meal, porridge made with water, margarine and sugar ; for two years on bread, potatoes, cabbage soup and fruit soup without fat. The object of this heroism was to determine the protein and fat minimum. It is not stated whether the man is still alive. Hindhede states that " bran is one of our most valuable articles of nourishment,"

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(3) Babes (V.). Observations sur les substances photodynamiques et le pigment, dans la pellagre.—*C. R. Soc. Biol.* 1923. Apr. 14. Vol. 88. No. 12. pp. 916–919. [13 refs.]

(4) Hindhede (M.). Protein and Pellagra.—*Jl. Amer. Med. Assoc.* 1923. June 9. Vol. 80. No. 23. pp. 1685–1689. [22 refs.]

and that the Danish war rationing was largely based upon the value of this substance. "The question of pellagra is not a question of protein, but of vitamin"

To this work of Hindhede, GOLDBERGER (5) makes answer. He states that lack of animal protein has not been suggested by himself or anybody else as the cause of pellagra. Thus, much of Hindhede's argument does not apply. "In view of our position with respect to animal protein, it must be obvious, if the problem were the simple alternative between animal protein and vitamin, as Hindhede seems to consider it, we should logically have to agree with him as to vitamin. . . . The matter is not so simple, for to us it is a question not of a lack of animal protein but of a faulty protein (amino-acid) supply."

GOLDBERGER (6), in a further paper, elaborates the theory that an amino-acid deficiency is the primary aetiological factor in pellagra. Six cases are quoted in which the disease developed in patients fed for three to four months upon a diet in which vitamins and mineral salts were fully represented.

In the opinion of DEEKS (7) excess of carbohydrate in the diet is as important as deficient protein as a cause of pellagra.

SHATTUCK (8) analysed the case histories of 144 pellagrins in the hope of discovering possible aetiological factors. Fifty-eight revealed nothing of importance. In the remaining 86 cases, chronic alcoholism was noted in 26, eccentricity of diet in 23, pre-existing mental disease in 13, debilitating influences in 19, and chronic wasting diseases in 5. In more than one-third of the 52 cases in males, there was evidence of chronic alcoholism. This does not mean necessarily that alcohol is the direct cause of the disease, for the well-known gastric disturbances, and the financial straits consequent upon chronic indulgence in this drug probably play a very important part.

SHATTUCK (9) also discusses pellagra in the state of Massachusetts. Apparently the first case was noted in 1864, but it was only in 1914 that pellagra was listed as a reportable disease. The maximum number of cases was in 1916 and this increase appears to have been due to high prices and scarcity of food. The following points are of interest: The disease apparently originates in the State itself because most of the cases were in native-born residents; the disease is most common where population is dense; women are more often affected than men; amongst women the majority were house workers and in males unskilled labourers; the skin lesions appear most often in July, but no month in the year is exempt.

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(5) GOLDBERGER (Joseph). Protein and Pellagra. [Correspondence.]—*Jl. Amer. Med. Assoc.* 1923. June 23. Vol. 80. No. 25. pp. 1866–1867.

(6) —— & TANNER (W. F.). An Amino-Acid Deficiency as the Primary Etiologic Factor in Pellagra.—*Ibid.* 1922. Dec. 23. Vol. 79. No. 26. pp. 2132–2135. [4 refs.]

(7) DEEKS (W. E.). The Etiology and Treatment of Pellagra.—*Southern Med. Jl.* 1922. Nov. Vol. 15. No. 11. pp. 891–898.

(8) SHATTUCK (George Cheever). Pellagra in Massachusetts.—*Boston Med. & Surg. Jl.* 1923. Jan. 25. Vol. 188. No. 4. pp. 110–115. [22 refs.]

(9) ——. Factors apparently influencing the Development of Pellagra in Massachusetts. *Ibid.* June 7. No. 23. pp. 889–891. [2 refs.]

The disease in Ontario is discussed by STEVENSON (10). The first case in this province was reported in 1914, while in the period 1913 to 1922, inclusive, 30 deaths from pellagra have been recorded. The figures show that of 28 of these cases 21 were women and seven men and none children. Two further cases which ended fatally are described. In one of these the fungus of JOBLING and ARNOLD (2) was looked for but without result.

In Berlin, at the Charité Hospital, 10 cases have been described by VON BONHOEFFER (11). Six of these were apparently true pellagra, but it is disquieting to note that they also had subcutaneous haemorrhages and bleeding gums. Five of these ended fatally. Mental symptoms were very common. The rash appeared between February and October. Deficient diet seems to have been the most important aetiological factor, and maize can be definitely excluded.

Pires DE LIMA (12) contributes a review on pellagra in Portugal. The main value of this, as the author himself states, is to supply a bibliography dealing with articles published only in obscure local journals.

Before the Dermatological Section of the Royal Society of Medicine in London, STANNUS (13) showed a case of possible pellagra occurring in a British store-keeper in West Africa. The rash appeared for the first time about four months after his arrival in the country. Except for the skin condition, the diagnosis was extremely problematical.

As regards clinical work on pellagra, very few new observations appear. Mention must be made, however, of a paper by HUCK (14) dealing with the blood picture. "In all stages of uncomplicated pellagra, the blood picture shows a secondary type of anaemia with a normal leucocyte count. The differential formula shows an increase in lymphoid elements when the symptoms are severe. When the symptoms have subsided, and the patient is in the convalescent stage, the polymorphonuclear eosinophils are increased. The platelet counts are normal." The stools were also examined and it was found that neither intestinal parasites nor skin lesions play any part in the eosinophilia, and that this was indicative of a good prognosis. A very full bibliography is given.

A. Douglas Bigland.

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(10) STEVENSON (G. H.). Pellagra in Ontario with Report of Two Cases.—*Canadian Med. Assoc. Jl.* 1923. July. Vol. 13. No. 7. pp. 504–507. [10 refs.]

(11) VON BONHOEFFER (K.). Unterernährungspsychosen von Pellagratypus.—*Deut. Med. Woch.* 1923. June 8. Vol. 49. No. 23. pp. 741–745.

(12) PIRES DE LIMA (J. A.). La Pellagre en Portugal. (Revue Critique.)—Reprinted from *Med. Moderna.* 1923. No. 354. 10 pp.

(13) STANNUS (Hugh S.). Case of (?) Pellagra.—*Proc. Roy. Soc. Med.* (Sect. of Dermat.). 1923. Jan. Vol. 16. No. 3. pp. 27–28.

(14) HUCK (John G.). The Blood Picture of Uncomplicated Pellagra with a Review of the Literature.—*Bull. Johns Hopkins Hosp.* 1923. May. Vol. 34. No. 387. pp. 157–164. [29 refs.]

MISCELLANEOUS.

O'Connor (Francis W.). **Researches in the Western Pacific. Being a Report on the Results of the Expedition sent from the London School of Tropical Medicine to the Ellice, Tokelau, and Samoan Islands in 1921–22.**—*Research Memoirs of the London School of Tropical Medicine.* 1923. Vol. 4. pp. iv+57+ii. With 8 plates. [Price 4*s*.]

A preliminary account of this expedition was published in the *Transactions of the Royal Society of Tropical Medicine and Hygiene* [see this *Bulletin*, Vol. 20, p. 5]. The author was engaged for 17 months in actual scientific investigation, during which he surveyed 20 islands in the Samoan, Tokelau, and Ellice groups. The geography, topography and climate of these are described. Thus, the Samoan group consists of eight [four are American] inhabited islands of volcanic origin, of which Savaii reaches an elevation of 4,000 feet; the Samoans live on the low-lying coast country close to streams and plantations. The Tokelau and Ellice groups are atolls and not more than 20 feet above sea level. The customs and habits of the islanders are considered. The diseases prevalent are ankylostomiasis, filariasis, yaws, tuberculosis and skin affections, especially Tinea imbricata. In Samoa eye diseases are common and leprosy is not rare. In the Southern Ellice fish poisoning occurs.

The author first makes some general observations on the three groups and then treats each individually. Of the general blood picture it may be said that the leucocyte count is usually higher in natives than in Europeans, counts of 9,000–10,000 being common. The eosinophile count was usually above normal and averaged 20 in three children of five and under whose only parasite was Trichuris; observations of Europeans showed that filariasis alone can raise the percentage. Considering the heavy weight of hookworm infection the haemoglobin percentage was not remarkably low.

Filariasis.—Epidemiological and experimental evidence confirmed *Stegomyia pseudoscutellaris* as the intermediate host (Bahr, Fiji, 1910). Thus, in the Tokelaus, where filariasis is indigenous, this is the only mosquito and elsewhere the incidence of filaria increased with that of *S. pseudoscutellaris*. Mosquitoes of this species hatched from larvae and fed on filariated subjects were found after an interval to contain fully developed larvae in head and proboscis and similar findings are recorded in seven specimens of 100 caught wild. An account is given of the development in the mosquito. It bites by day and breeds in fresh water containing decaying vegetable matter—in husks and shells of coconuts, holes in trees whether artificial or natural, bottles and tins, depressions in the larval rock (Samoa), cocoa pods which have been excavated by a rat. Measures for its control would not be difficult; indeed the author suppressed it in one islet in two days.

Observations on the microfilaria, which is non-periodic, are given. The author found (a) that microfilarial incidence is in direct relation to the prevalence of *S. pseudoscutellaris*, (b) that the incidence of clinical filariasis is in direct relation to the microfilarial incidence, and (c) that elephantiasis is usually prevalent where clinical filariasis is greatest. Children below the age of four rarely show undoubted signs of filarial infection. The author's observations support the opinion generally held that elephantiasis is a manifestation of filarial infection.

The clinical signs of filariasis are discussed and especially the early signs, for Dr. O'Connor's assistant, Mr. C. E. BERRY, became accidentally infected. Two days after the infective bites (in April) several hard, brawny, extremely itchy bites, each about the size of a shilling, were noted; on the 43rd day the epitrochlear gland was swollen and tender and was removed on the 71st; on the 156th day there was a severe attack of lymphangitis lasting a fortnight, beginning with pain and swelling of the axillary glands; on Nov. 11th the eosinophile count was 12 per cent; on the 254th day there was tenderness and slight swelling of the epididymis; on March 1st the eosinophile count was 16 per cent. These are the salient features of the case. The removed gland showed haemorrhages and large clusters of eosinophiles; no worms.

Cases (one to six in each instance) were treated with salvarsan, novarsenobillon, galyl, kharsivan, tartar emetic, stibenyl, collosols of copper, selenium and manganese, quinine hydrochloride and emetine—without effect on the microfilariae. Symptoms were sometimes mitigated by the bodily rest.

Other Diseases.—Of helminths three species of hookworm were found, *Necator americanus* being the commonest; *Ascaris lumbricoides* (in Samoa) and *Trichuris trichiura*; no cestodes or trematodes. Ankylostomiasis is serious. "Ova were found in every case of filariasis brought in for treatment"; over 90 per cent. must be infected. Latrines staged over the sea is the obvious preventive. Tuberculosis, "the scourge of the Pacific," is prevalent in every island. In young children fatal tuberculous peritonitis is very common, in older children tuberculous neck glands, and in adults phthisis. The customs of the people lead to the simultaneous infection of entire families. Yaws is common—manifested by cracked feet, granulomata, onychia; in a few instances deformity of the tibia. Juxta-articular swellings with past history of yaws occurred in all the islands. Gonorrhoea was not observed and syphilis, "if it exists at all, cannot be common." [Cf. this *Bulletin*, Vol. 20, p. 179.]

Particular aspects of disease in each group are next considered and must be dealt with briefly. The filarial incidence for each island was worked out and correlated with the incidence of the Stegomyia. In the *Ellice* of 1,169 persons above 16 years 716, or 61·2 per cent., showed evidence of infection, either microfilarial or clinical (including elephantiasis); of the last 120 cases were seen. The absence of ascariasis in this group is attributed to the sweet husk of a coconut which the Ellicians are accustomed to chew; two infested Samoans lost their worms after several months in the Ellice. Ankylostomiasis affects probably 100 per cent. of adults, and to this in part it attributed the appalling susceptibility to tuberculosis. The whip-worm is extremely common. Cysts of *E. histolytica* were found in 1·3 per cent. of 225 examined but there is no tradition of amoebic dysentery. Balantidium was found neither in man nor pig in this group, possibly again due to the coconut. Interesting information is given about fish poisoning on some of the southern atolls; rock haunting fishes of certain species taken in a particular locality are toxic to the eater, but there was no opportunity to verify the native statements.

In the *Tokelau* group the inhabited islets are so small that they are completely cultivated and no cover is left for mosquitoes; the uninhabited islets shelter the Stegomyia. The filarial incidence was 36·7 per cent. (330 examined). Details are furnished for 3 islets. No case of elephantiasis was seen or reported.

In *Samoa* of 2,509 persons past their 16th year 1,463, or 58·3 per cent., showed evidence of filarial infestation : 115 cases of elephantiasis were seen. Enlarged epitrochlean glands were found in a large proportion of children in two schools. The ankylostome percentage was 85·1. *E. histolytica* was found in 9·6 per cent. (229 examined) ; 2 cases of amoebic dysentery were seen in Chinese. Three epidemics of Samoan conjunctivitis occurred during the author's stay ; in default of proper treatment it is followed by ulceration of the cornea ; it resembles gonorrhoeal ophthalmia and LEBER has described a diplococcus as the cause. Gonorrhoea seems to be excessively rare.

Part III consists of an account of parasites found in animals, of the life-history and habits of *Stegomyia pseudoscutellaris* and of *Finlaya kochi*, an aggressive mosquito in Samoa. *S. pseudoscutellaris* is most prevalent in densely shaded parts of the bush and in houses of European construction, but is rarely found in the top storey of two-storeyed buildings. At the grave of R. L. Stevenson, 1,500 feet above the sea, it is a great pest.

The Report is nicely illustrated and is a model of arrangement and lucidity.

A. G. B.

MADRAS. **Reports on the Working of the King Institute of Preventive Medicine, Guindy, for the Official Year 1921–22 and the Micro-Biological Section for the Period from 1st January to 31st March, 1921** [CUNNINGHAM (J.), Major, I.M.S., Director.]—pp. 30+3. 1923. Madras : Supt. Govt. Press. [Price 10 annas.]

An attempt was made for the first time to show the earning capacity of the King Institute as well as the cost of upkeep. By calculating vaccine at one anna per case and estimating bacterial vaccines and various examinations at the sanctioned Government rate it is shown that the Vaccine section made a profit of Rs. 42,875 on the year's working and the Microbiological section one of Rs. 67,425.

There was a greatly increased demand for prophylactic cholera and T.A.B. vaccines but even so the amount of cholera vaccine used in the Presidency is very small considering the size of the population and the fatality of the disease. For the Widal test 813 specimens were received and tested for the three organisms of the enterica group and *M. melitensis*. Seeing that 457 were negative, if one may assume that malaria had been eliminated, the percentage of cases of unclassed fevers must be high in the Presidency.

Specimens were received from 34 suspected cases of diphtheria ; 11 gave positive results, 7 from Europeans and 4 from Indians ; there was a definite outbreak among European soldiers. In six instances a smear from the throat was the only specimen forwarded ; all were negative but positive cultures were afterwards obtained from three of these cases. The importance of obtaining such cultures as early as possible is stressed.

Of specimens of cerebrospinal fluid taken from 22 cases with meningeal symptoms the meningococcus was found on culture in five and a pneumococcus in four. The pneumococci were found on the first examination, the meningococci once only on the first, in three cases on the second, and once postmortem. Repeated examinations should therefore be made if the first is negative.

Some account of the Vaccine section will be given elsewhere.

A. G. B.

CHOISSER (R. M.). **The Hygienic Laboratory of the Republic of Haiti.**—*U.S. Nav. Med. Bull.* 1923. Jan. Vol. 18. No. 1. pp. 56–61.

The laboratory was established by means of an appropriation of 2,000 dollars from the Department of State in Haiti in November 1921 in two rooms of the City Hospital at Port au Prince and the author, of the U.S. Navy, was placed in charge. Specimens began to come in at once, in many instances, owing to the defective communications, by aeroplane. The examination of sputum showed tuberculosis to be a common affection; the disease is very fatal. Of intestinal parasites ova of ascaris and trichuris are common. No cestode eggs have been seen nor any ankylostoma. This infection does exist in the northern part and is common in the adjoining Dominican Republic. Typhoid fever, plague and yellow fever are unknown; *S. fasciata* is very common. *Entamoeba histolytica* has not yet been isolated; dysentery is severe at times. Malaria is very prevalent; of 285 smears examined 65 were positive, all three forms being represented. Filaria infection and elephantiasis are quite common. Syphilis is unusually prevalent; a Wassermann is done on all patients admitted to the General Hospital; of 771 tests 549 or 71·2 per cent. have been positive. OSLER states that Haiti furnished the first historical evidence of luetic infection. It is rare to meet with tabes or paresis. A case of rabies in a boy was seen and Negri bodies demonstrated.

[Neither yaws nor leprosy is mentioned.] A. G. B.

BERNARD (Noël). **Rapport sur le fonctionnement des divers services de l'Institut Pasteur de Saigon en 1921 (Extraits).**—*Ann. de Méd. et de Pharm. Colon.* Paris. 1923. Jan.-Feb.-Mar.-Apr. Vol. 21. No. 1. pp. 81–92.

In the rabies section 452 persons were treated, a larger number by 50 than in any previous year, about half in Saigon and its vicinity. A table of cases from 1908 onwards shows a large and progressive increase in the last seven years. Energetic measures have been taken for the destruction of errant dogs. A table gives the bacteriological analyses. Of 34 positive blood cultures, in 16 Eberth's bacillus was found, and in 10 the *Bacillus asthenogenes*. Of 77 positive malarial slides in two-thirds the parasite was *P. vivax* and in one-third *P. falciparum*. The diphtheria bacillus was recognized in 50 cases. Hansen's bacillus was found in 27 suspects of leprosy. A suspicion that of uncertified deaths plague was probably a frequent cause led to the examination of the bodies of 214 children and 9 adults. The plague bacillus was found in five adults but in none of the children. The vaccine laboratory put out 2,650,630 doses of Jennerian vaccine, which necessitated the employment of 256 buffalos and 75 rabbits. At the Institute itself this gave 95–99 per cent. successes, but for various well-known reasons a smaller success rate in the districts. The section on animal microbiology will be treated elsewhere. A. G. B.

SOUTH AFRICAN INSTITUTE FOR MEDICAL RESEARCH. **Annual Report for the Year ended December, 1922.** [WATKINS-PITCHFORD (Wilfred), Director.] 48 pp. With 2 plates. 1923. Johannesburg. Published by the South African Institute for Medical Research, P.O. Box 1,038.

Research Division.—Of 48 strains of the Meningococcus obtained from the cerebrospinal fluid of three Europeans and 45 natives 13 were of Gordon's Type I, six of Type III, and 29 aberrant, indicating

a rise in the incidence of infections due to aberrant strains* which complicates the production of efficient anti-meningococcal serum. A method for preserving the meningococcus alive for transmission abroad consists in " planting the whole of a twenty-four hour growth of Meningococci from a blood-agar slant into a tube of heated (' chocolate ') human-blood-agar whilst the latter is still liquid at a temperature of 40° C. In thirty-six hours a profuse growth has occurred which, however, does not take the form of colonies visible to the naked eye." After the inoculation of 24 natives with meningococcal vaccine no trace of agglutinins could be detected in their serum, but it is allowed that some immunity may have been produced. The method for preserving the pneumococcus in a viable condition—growth in defibrinated rabbit's blood, desiccation in vacuo, and preservation in glass tubes in vacuo—has proved its worth.

Clonorchis sinensis was found in a Chinaman dying in Johannesburg. Seeing that the fresh-water snail, *Bithynia*, and fresh-water Cyprinodont fish, the intermediate hosts, occur in South Africa, Clonorchis might establish itself in the Union. The results of freezing on the vitality of tapeworm cysts have been given [this *Bulletin*, Vol. 20, p. 625]. The conclusion is that when a carcass is heavily infested it should not be used for human food, even after freezing for 12 weeks.

Routine Division.—As before, amoebic dysentery was much more prevalent than bacillary, two cases only of which were encountered. Examinations for enteric fevers more than doubled, for the joint reasons that the disease was more prevalent, there were several hunts for carriers, and the practice in suspected typhus is to have both Widal and Weil-Felix tests made. There are still a number of cases of enteric which fail to develop agglutinins, but all is not enteric that is so labelled.

To illustrate the difficulty of eradicating benign tertian it is stated that the parasite was found in 44 out of 500 ex-soldiers, nearly all of whom were infected four years back and had undergone long courses of treatment. There were 24 positive findings of undulant fever; the difficulty in diagnosing chronic cases is touched on. Epidemic cerebrospinal meningitis being prevalent on the rand from June to September, 927 examinations (C.S.F. or naso-pharyngeal swabbings) were made: 357 cases were found to be meningococcal and 17 pneumococcal. The supply of antimeningococcal serum temporarily ran out; serum was imported but, perhaps owing to deterioration in transit, the therapeutic action was practically nil, whereas the local serum gave good results.

Routine examinations for schistosome ova showed their presence in 226 patients; in all but two these were *S. haemotobium;* in one sample of faeces *S. mansoni* was detected, and in one urine *S. spindalis*. In post-mortem material evidence of bilharziasis was found seven times in the liver, once in the kidneys, and in a number of lungs. The microscope shows a fine diffuse interstitial fibrosis throughout the lung which might influence the course of a pneumonia. Nineteen further cases of primary carcinoma of the liver have come under notice; schistosome ova were found in six, in one *Clonorchis sinensis* and in one

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* In the review of the Report for 1921 [this *Bulletin*, Vol. 20, p. 511], para 3, lines 2 and 3; for "3 with Gordon's Type II" read "3 with Gordon's Type III."

Cysticercus cellulosae. It is concluded that " toxins " from the parasites would explain the cirrhosis which precedes the malignant disease.

Of 870 Weil-Felix tests 170 were positive. The position as regards the value of this reaction is unchanged [this *Bulletin*, Vol. 20, p. 512.] No local strain of *B. proteus X 19* has yet been obtained.

Several cases of a hitherto undescribed disease have been met with. It is called pseudo-tuberculosis and there is a suggestion that it has some relation to acute splenic abscess of WALLACE [*op. cit.*, Vol. 19, p. 616].

A. G. B.

MEDICAL JOURNAL OF SOUTH AFRICA. 1922. Nov. Vol. 18. No. 4. pp. 104–105. [**Meeting of Witwatersrand Branch of the British Medical Association.**]

Four specimens of " pseudo-tuberculosis,"—two acute, two chronic—were shown by [?] Dr. J. H. Harvey PIRIE. The chronic cases—natives—showed abscesses (*a*) in liver and spleen, (*b*) in spleen.

Acute cases: (1) European miner, on September 3 complained of painful frequent micturition and haematuria. No history of venereal disease, bilharziasis or haemophilia. Temperature rose to 102° and patient died on September 13, " like a case of septicaemia." The liver was dotted with large white spots suggestive of early tuberculous lesions. Spleen large. Pelvis of right kidney distended with blood clot. Petechiae in mucosa of bladder. Histologically, lesions in liver resemble acute tubercles but no organisms found save some bipolar staining bacilli.

(2) A native, who died on the 2nd or 3rd day with haematuria and jaundice. Tubercle-like structures in spleen. Small bacilli found, some bipolar, staining with iron haematoxylin. Inoculation of guineapigs negative.

A. G. B.

AUDIBERT. **Les maladies endémo-épidémiques observées en Indochine pendant l'année 1921 (Extrait du Rapport annuel).**—*Ann. de Méd. et de Pharm. Colon.* Paris. 1923. Jan.–Feb.–Mar.–Apr. Vol. 21. No. 1. pp. 61–75.

The chief sanitary officers throughout the Indo-Chinese Union are unanimous in attributing to *malaria* the most important part in the morbidity and mortality of Indo-China. It diminishes the birth-rate and is the cause of many abortions. In Cochin-China careful enquiry showed that 3 per cent. of pregnancies were cut short by malaria. The population is feeble, unfit for work, hence poor; and malaria " makes the bed for other diseases." To give some particulars, 13,800 patients were treated, of whom 1,160 died, and 230 cases of blackwater fever with 25 deaths. In Cochin-China, a delta country, malaria formed one-seventh of the total hospital admissions; two-thirds of the cases were benign tertian; pernicious attacks and blackwater were rare. In the high country of Annam and Laos pernicious attacks and blackwater are frequent [the type of malaria is not given]. The methods of controlling malaria are detailed. Education and the willing consent of the natives to measures found necessary are an essential part. Persons licensed to sell alcohol and opium have to sell quinine as well at rates fixed by the local authorities. In this year 1,639 kilos were sold, or given away to authorized poor.

Cholera was this year more prevalent, especially in Cochin-China, where there were 2,206 cases. They were scattered and nowhere

formed a true focus. Vaccination gave good results and was readily accepted; it is now obligatory wherever epidemic conditions are declared; 127,000 persons were vaccinated, against 44,000 in the previous year.

Of *plague* there were 1,118 cases and 971 deaths, larger figures than in the two preceding years. The most important focus was Pnom-Penh, the capital of Cambodia, where it is stated improved sanitary conditions are necessary as well as anti-rat measures and vaccination. Vaccinations numbered 45,000.

Small-pox is on the decrease. Infants are readily brought for vaccination but adults will not be troubled. Almost all the cases are among adults; 2,319,000 vaccinations were done with lymph furnished by three Institutes in the Union.

Leprosy is spread almost uniformly through the country. In Tonkin 3,300 lepers are known, two-thirds of whom are distributed in five leproseries. Another 3,000 are in Cochin-China. A native remedy, the composition of which is imperfectly known, has been tried with a considerable degree of success.

There were 1,609 cases of *beriberi* (three-quarters in Cochin-China), and 264 deaths. BERNARD, Director of the Pasteur Institute at Saigon, says that these cases begin with a febrile attack, which he believes to be of intestinal origin, due to an organism which he has called *Bacillus asthenogenes*. It can be isolated from the blood and inoculated to pigs [see this *Bulletin*, Vol. 19, p. 755]. Treatment consists, apart from a free supply of vitamins, in the progressive, discontinuous intramuscular use of strychnine in high doses. Details are given and the results in 26 cases; 1,500 such injections had been given.

Of *dysentery* 2,155 cases were declared, with 29 deaths. "Amoebae" were found 164 times, flagellates and spirilla about the same number each, dysentery bacilli 31 times. In Annam liver abscess is common in the native, rarer every year in the European.

Tuberculosis is wide-spread; 2,275 cases and 559 deaths were registered. All forms are seen. All the conditions are found for its dissemination both amongst the poor and among the native clerks.

Venereal diseases, after malaria, cause most sickness; 5,415 cases of syphilis were seen at the medical centres.

Other diseases noted were cerebrospinal meningitis 142 cases, and diphtheria 46, half in natives, half in Europeans, all of whom recovered.

A. G. B.

BENTMANN (Eugen) with HILTMANN (Eduard) & KÖHLER (Otto). **Kriegsärztliche Erfahrungen in Anatolien.** [Experiences of an Army Doctor in Anatolia.]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1923. Vol. 27. Beihefte. No. 1. pp. 1–135. With 18 figs., 1 chart and 4 sketch maps. [47 refs.]

This supplementary number contains an account of the doings of a travelling field-laboratory in a part of Asia Minor during the latter years of the war: we get from it some idea of the prevalent diseases of the provinces of Angora and Taurus, since the material examined and

the general observations recorded were furnished not only from Turkish soldiers and recruits but also from the local populations.

In Angora, where over 10,000 investigations were made, the laboratory worked for more than seven months, from December, 1916, to July, 1917. The following is a summary of the diseases verified: Typhus, 549 cases—mortality 51·4 per cent., largest number of cases (175) in January. Relapsing fever, 280 cases—mortality 32·5 per cent. Cholera, height of epidemic in February, when the vibrio was found in 52 cases. Typhoid groups, of 382 stools examined for typhoid and dysentery the bacillus was found in only five cases of typhoid and one case of paratyphoid A. Dysentery, of the 382 stools examined the Flexner bacillus was found only in seven and the Y bacillus only in three: only two cases of amoebic dysentery were diagnosed. Malaria, in 3,931 blood examinations among troops, parasites were found in 143 cases; and in 1,702 examinations among the civilians only 23 were positive, namely 15 quartan, seven benign tertian, and one malignant tertian. Phlebotomus fever, two cases, in June and July: *P. papatasii* was the species observed. Tuberculosis, 14 cases of pulmonary tuberculosis, 15 of catarrh of apex, five of tuberculous pleurisy, 31 cases of scrofulous glands, 25 cases of surgical tuberculosis. Gonorrhoea, 12 cases. Syphilis, six cases and two cases of inherited syphilis. Among children a very few cases of diphtheria, hooping-cough, mumps, and measles were diagnosed. Tetanus, epidemic meningitis, and leprosy were not observed, and smallpox was known only through civilian statistics. About one-fourth of the 233 cases of eye disease were trachoma, and next in frequency came scrofulous forms of conjunctivitis and keratitis. More than one-third of the 146 cases of diseases of ear, throat and nose were chronic otitis media. Diseases of children were chiefly scrofulous. Of skin diseases (140 cases) nearly half were eczema and nearly a quarter itch. Of 413 examinations of stools for evidence of worms 199 were positive; and the species found were as follows, in percentage of stools examined: *Ascaris lumbricoides*, 43; *Trichocephalus*, 20·8; *Taenia saginata*, 6; *Hymenolepis nana*, 0·96; *Oxyuris vermicularis*, 0·48; *Strongyloides stercoralis*, 0·24. One case of hydatids of liver was observed.

The laboratory was busy in the Taurus for about a year, from August, 1917, to July, 1918. The following is a summary of the diseases diagnosed: Typhus, 156 cases, the highest number (46) being in April. Relapsing fever, 244 cases, the maximum (60) in April also; the mortality was 7·8 per cent. Malaria, 2,798 cases, the largest number (518) in October, the lowest (46) in June. Dysenteries of various kinds, 202; the Shiga and Y bacillus were verified three times each and the Flexner once; eight cases were amoebic. Typhoid groups, 10 cases; verified by serum tests. Cholera, 7 cases. Smallpox, 3. Mumps, 25. Measles, 1. Epidemic meningitis, 1. Erysipelas, 31. Influenza, 70. Tuberculosis, 23. Tetanus, 2. Diphtheria, 1. Malaria is said to be nearly as common as syphilis here. Parasites were found in 1,733 of the 2,798 reported cases, the benign tertian in 421, the quartan in 10, and the malignant tertian in 1,252, while in 32 cases the infection was mixed, and in 18 the species was not determined. The carriers observed were *Anopheles maculipennis* and *A. superpictus*, the latter being more than twice as abundant as the former. The malaria of the mountains is a much more serious disease than that of the plains. Many clinical varieties of malignant tertian were observed and the death-rate was considerable, being much higher (6·8 per cent.) among Turks than mong Germans (0·5 per cent.).

The introduction contains some good illustrations of this travelling field laboratory, and some zoological contributions are given in an appendix. [See also this *Bulletin*, Vol. 19, pp. 609–11.]

A. Alcock.

CANTLIE (N.). **Description of the Diseases of Mongalla.**—*Jl. Trop. Med. & Hyg.* 1923. Feb. 1. Vol. 26. No. 3. pp. 35–45. With 3 text figs.

The diseases described or mentioned, set down in order of importance, are—smallpox, yaws, gonorrhoea, soft sore, phimosis, tropical ulcer, leprosy, guinea worm, rectal bilharziasis, quinine haemoglobinuria, blackwater fever, intestinal worms, sleeping sickness, dysentery, filariasis, myiasis, skin diseases, juxta-articular nodules, gangosa, bronchial spirochaetosis, pneumonia, eye diseases, boomerang bones, myositis purulenta tropica, Banti's disease. Malaria is not mentioned except incidentally.

Smallpox is difficult to control because the vaccine supplied, in powder form, is often ineffective, the natives are averse to vaccination and the villages inaccessible : means of overcoming these difficulties are suggested. A long description of yaws is based on CHALMERS and CASTELLANI's account. It is extremely common. The author has never seen a case of syphilis in a native of Mongalla. From the examination of nearly 20,000 natives the incidence of leprosy is estimated at 1 per 1,000 ; nodular and anaesthetic and mixed cases are seen. In regard to guinea worm the author thinks that the interval between infection and the worm's piercing the skin varies with the opportunities for extrusion of larvae, and seems to think that under dry conditions the worm never appears ! Three cases of rectal bilharziasis were seen, all in natives who had never left Mongalla. Symptoms disappeared in two after treatment with antimony tartrate and in one after thymol ; the last was well and doing his work as servant a year later.

The author saw eight cases of "quinine haemoglobinuria" and briefly describes three. All were malarial natives from the north—none local. One patient had a relapse after swallowing 5 grs. of quinine bisulphate. A ninth case, in a European who died with jaundice and suppression of urine, is described as blackwater fever, but the author adds that he regards it as an aggravated case of quinine haemoglobinuria and does not consider blackwater fever to be a separate entity.

Amoebic dysentery is said to be uncommon but to exist in the cattle districts ; no mention is made of microscopical examination. It is treated with emetine and small doses of mag. sulph. Bacillary dysentery also is said to occur. Varicose lymphatic glands and elephantiasis are apparently attributed to the presence of *Filaria perstans*. A swollen and ulcerated condition of the foot and ankle is attributed to blastomycosis. Madura foot, Oriental sore and granuloma inguinale are said not to occur. Though bronchial spirochaetosis is described the author says he was never able to find spirochaetes in the sputum.

Under eye diseases pannus is mentioned but the author has not met with trachoma in natives of Mongalla. The condition described as boomerang bones affects the tibia, fibula, radius and sternum [see CHRISTOPHERSON, this *Bulletin*, Vol. 16, p. 219]. The cause is unknown. It is not stated whether the spleen was punctured in the two cases seen of Banti's disease. Antimony was given (dosage not stated) but without effect.

A. G. B.

MINETT (E. P.). **Preliminary Training for the Colonial Medical Services.**—*Jl. Trop. Med. & Hyg.* 1923. Jan. 1. Vol. 26. No. 1. pp. 5–6.

General opinion would confirm the statement, Dr. Minett thinks, that the medical officer has to learn a portion of his work after appointment. He himself, when appointed Bacteriologist to British Guiana, found that he was expected to perform the functions of pathologist, entomologist and public health laboratory worker. He outlines the training he would suggest for general medical officers and specialist medical officers.

The former he would require, after registration, to hold a house appointment at a recognised general hospital for six months, take a course at a school of tropical medicine and obtain the examination certificate. Medical officers on leave should receive extra leave on full pay to attend courses in special subjects.

The specialist medical officer (1) should hold a post-graduate appointment at a general hospital in pathology or bacteriology for one year, or a similar period as assistant to a whole-time medical officer of health, (2) join a school of tropical medicine for two years, during which he would be employed as demonstrator, and hold in succession assistantships in the departments of tropical pathology, sanitation, helminthology, protozoology, bacteriology and entomology for three months each, (3) take the diplomas of D.P.H. and D.T.M. The Colonial Secretary might be asked to appoint two men annually for training on these lines, for the expenses of which small sums might be collected from Colonial Governments and such large industrial interests as would have occasion to employ them. The trainees would receive £200–£300 per annum and board during the courses, subject to satisfactory reports of their progress.

Both classes of officers would be given seniority for pay and pension according to the length of the training.

[There will be general agreement on the advantages, both to the medical officer and his colony or sphere of work, of such a scheme, which will become practical politics when the colonial medical services become the colonial medical service, but even the Admirable Crichtons that may be expected to result will have much to learn when they reach the outposts.]

A. G. B.

D'ANFREVILLE DE LA SALLE (L.). **Projet de colonisation indigène et de stabilisation des populations locales.**—*Rev. Méd. et Hyg. Trop.* 1923. Jan.–Feb. Vol. 15. No. 1. pp. 23–27.

The author emphasizes the need of weaning the Moroccans from nomadism and attaching them to the soil. Large areas of the country are occupied by dwarf palms, which seriously interfere with cultivation. An industrial stage in which the palms are treated would precede the stage of cultivation, and he details the methods by which he would accomplish these ends and at the same time those of hygiene.

A. G. B.

CAZANOVE (M.). **Considérations médicales sur la Syrie et le Liban.**—*Presse Méd.* 1923. Jan. 24. Vol. 31. No. 7. pp. 125–133. With 1 map in text.

Syria is divided by nature into three zones, a coastal, a mountainous —consisting of the Libanus and Anti-Libanus ranges and the valley

between—and a desert zone, each with a different climate, the character of which is described.

Of diseases *plague* is common and is usually seen at Beyrouth, Tripoli and Alexandretta ; its occurrence is sporadic but small epidemics occur. Rats abound, as do food and shelter, so that there is little prospect of reducing their numbers.

Smallpox is prevalent. Since the French occupied Syria they have founded a vaccine institute at Beyrouth and have improved another at Damascus.

Measles is serious, causing a 10 per cent. mortality in a recent epidemic ; *scarlet fever* is extremely rare.

Malaria is met with chiefly at Damascus, Alexandretta and in the bend of the Orontes river ; the favourable breeding conditions for Anopheles in these places are described. The splenic index of the Syrian population is now under examination.

Enteric fevers are endemic. The whole population uses polluted water and dust abounds ; paratyphoid A is frequent.

Amoebic dysentery is endemic but liver abscess is rare : bacillary dysentery is seen frequently in the European contingents of the army. Phlebotomus or *three-day-fever* appears with the sand-flies.

In two leproseries at Damascus, one, it is reputed, on the site of the house of Naaman the Syrian, 13 *lepers* were found in 1921. Damascus has the reputation of cutting the disease short. Two had been there 40 years, one 30 years, one 18, one 12, one 10 years and in all the disease appeared to be arrested. No medical treatment has ever been undertaken. In a place near Alexandretta were found eight lepers in three families, but leprosy in Syria, generally speaking, is rare as well as mild.

As to the diseases of the Syrian population they can only be inferred from the death certificates in the towns. At Beyrouth, for instance, of 950 deaths 108 were from *tuberculosis*, and, at Aleppo, 183 out of 1,320. This disease is feared and the natives take complete measures of disinfection, going so far as to destroy the patient's house on his death. In cases seen the course was rapid. Venereal diseases and eye diseases are common, especially the latter ; dust and flies abound.

A. G. B.

CHIRAY (M.). **La médecine au Brésil.**—*Presse Méd.* 1923. Apr. 18. Vol. 31. No. 31. pp. 637–645. With 6 text figs.

In Brazil there are medical faculties at six centres, Rio de Janeiro, Sao Paulo, Bahia, Bello Horizonte, Rio Grande do Sul, and Parana ; the author visited the two first. Rio de Janeiro is the most important, with 2,000 students, 31 titular professors and 19 assistant professors ; only one of the four projected university buildings has been completed, and it is described as " a very happy realization." The magnificent Instituto Oswaldo Cruz, " a palace of gorgeous sumptuosity," one of the great research centres of the world, is Rio's crown and Brazil's glory. The medical faculty of Sao Paulo rivals that of Rio, and in its Institute of Serotherapy and its park of venomous snakes for the production of antivenene Sao Paulo possesses an establishment of world-wide renown. There is an Academy of Medicine and a Medico-Chirurgical Society in both places.

The medical curriculum in Brazil extends to six years. The programme of study conforms pretty much to the best European standards and the students are keen, but the teachers are too few and the hospital accommodation and organization need improvement ; the examiners had the reputation of being too indulgent.

A. Alcock.

SEI (Shigemoto). **Ueber die histologischen Veränderungen in den sogenannten klimatischen Bubonen unter besonderer Berücksichtigung der Gitterfasern.** [The Histological Changes in Climatic Bubo, with special reference to the Lattice Fibres.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1923. Apr. Vol. 27. No. 3. pp. 81–93. With 2 coloured plates. [16 refs.]

This paper gives a detailed account, with coloured illustrations, of the histological changes observed in the lymphatic glands in climatic bubo; the account does not profess to do more than confirm the statements of other observers. The typical changes seen in the earlier stages are those of a fibrinous inflammation with patches of desquamated endothelial cells and damaged vessels embedded in proliferated epithelioid cells; these patches undergo necrosis and are often thickly studded with fragments of broken-down nuclei. Later, the whole gland substance and its reticulum are invaded by proliferated connective-tissue the fibres of which become thickened and involved in a hyaline collagenous network and then quickly break down. The coloured illustrations show well the endothelial proliferation, the appearance of the necrotic patches, and the hyperplasia and further transformation and breaking down of the connective-tissue and reticulum of the gland.

A. A.

PATRICK (Adam). **Report on Bacteriological Examinations in Cases of Influenza, Malta Command, 1918.**—*Jl. Roy. Army Med. Corps.* 1923. Feb. Vol. 40. No. 2. pp. 133–138.

This study comprised the examination of sputa from 187 patients, and 23 autopsies. Among other organisms diplo-streptococci were found in 94 per cent. of the sputa, *S. aureus* in 27 per cent., and *B. influenza* in only 4 per cent.; in 83 per cent. of the fatal cases *S. aureus* was found. No clue was obtained to the nature of the primary infection. The occurrence of *S. aureus* in a large proportion of fatal cases has not, the author believes, been recorded; he notes that staphylococcus infections of the skin are very common in Malta. He does not think that the infrequency of the influenza bacillus was due to the unsuitability of the media employed.

A. G. B.

LOW (George C.). **Elephantiasis Nostras. Description of a Case, with Autopsy Findings.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1923. Mar. 15 & May 17. Vol. 17. Nos. 1 & 2. pp. 77–81.

The elephantoid swelling in this case began 26 years after the patient had left India (where he had served in the army for eight years) and had returned *permanently* to England. When admitted into the Hospital for Tropical Diseases, six months after the swelling began, the patient's feet, legs, scrotum, penis, and abdominal wall up to one inch of the navel were in a state resembling elephantiasis of filarial origin. While in hospital he had frequent attacks of lymphangitis. As the state of his genitalia was giving him much trouble, the scrotum and a considerable part of the elephantoid tissue of the penis were removed. Ultimately the patient died of intercurrent broncho-pneumonia. At the autopsy the lymphatic obstruction was found to be due to extensive scirrhoid carcinomatous infiltration of the lymphatics and lymphatic glands of the pelvis, which were inextricably matted together as high

as the receptaculum chyli. The axillary glands also were infiltrated and enlarged, though not embedded in altered lymphatic vessels. The prostate was similarly enlarged and much hardened, and it probably was the original source of the (metastatic) infiltration of the lymphatics. No calcified filariae or other evidence of filarial infection were observed. Extensive scars of long antecedent excision of buboes were found in both groins, and this may have been a contributory cause of the obstruction that ended in elephantiasis.

A. A.

RAMOS (Oscar). **Tratamento da "elephantiasis nostras" do membro inferior pela operação de Kondoleon.** ["Elephantiasis nostras" of the Leg treated by Kondoleon's Operation.]—*Arch. Brasileiros de Med.* 1923. Mar. Vol. 13. No. 3. pp. 281–289. With 2 text figs.

A woman, 25 years of age, who had had eight children, presented a condition of "elephantiasis nostras" of the left leg of five years' duration. In November, 1919, extensive removal of redundant tissue was performed, but by March, 1920, the condition was as bad as ever. Kondoleon's operation, but modified by leaving small bridges of muscular aponeurotic sheath, resulted in cure.

H. Harold Scott.

THAVARA (Mom Chow). **A Preliminary Report on an Epidemic occurring among Recruits in a Training Station in Siam.**—*Jl. Trop. Med. & Hyg.* 1923. Mar. 15. Vol. 26. No. 6. pp. 89–92. With 3 charts.

Two epidemics of an exanthematous fever—one in May–June, of 24 cases; the other, in August, of 6 cases—in a strength of 650 officers and men. In the first there were four deaths, three on the third day from sudden heart failure, and one after 12 weeks, from exhaustion; in the second, one case having a purpuric eruption ended fatally on the second day, from sudden heart failure. Many of the recruits, though none of the patients, were infested with head lice.

In every case the disease began with a very sudden rise of temperature, and nearly always with severe pains in head, back, joints, and all the limbs, so that the first few cases were diagnosed as dengue. On admission there was usually a copious rash on the arms and hands and the legs and feet, never on the abdomen, only once on the chest, but usually one or two spots on the forehead. The lungs, liver and spleen appeared normal, the heart was regular but rapid, and the pulse strong and of good tension. The bowels were constipated, though in one or two cases there was at the beginning frequent diarrhoea, and though the tongue was foul the appetite was remarkably good. There was not any albumin in the urine, but difficulty of micturition, sometimes even retention of urine, was an early and persistent symptom.

The temperature, rising suddenly to 102° F. or more at the outset, became normal in mild cases between the 4th and 7th days; but in severe cases continued to rise till the 3rd–5th day (in one case to 106° F.), continued of a remittent type for two to five weeks and remained above normal for six to eight weeks.

The pains in mild cases gradually subsided with the fever; but in severe cases the intense headache was accompanied by insomnia and maniacal excitement and rigidity of the spine (without the appearance of Kernig's sign), and this, after two or three days, gave place to apathy, confusion, amnesia, and some general loss of memory. In the severe

cases all the joints became swollen and very painful, the inflammation appearing to be outside the joint.

The initial rash faded on pressure, but in course of time it became dark—eventually almost black—and persistent; in some cases it terminated, about the eighth or ninth day, in desquamation; in other cases it became vesiculous and pustulous.

With the persistence of the disease the dry febrile skin turned persistently moist and the patient became wofully emaciated and feeble.

In the cases of the first epidemic nothing foreign could be found either in the blood or in the contents of the pustules, whether by the microscope or by culture; but three out of four guinea-pigs inoculated with the blood died in the course of the third week afterwards, revealing nothing abnormal post mortem.

In one only of the cases of the second epidemic was anything abnormal discovered. This was a mild case, with a maximum temperature of 104° F. becoming normal on the fourth day and the symptoms disappearing on the seventh day—all but the pains in the joints, which lasted till the tenth day. Blood-cultures from this case revealed a bacillus "having all the appearances of *B. pestis*." No case of plague, however, had been reported in the neighbourhood for many years: and no evidence of plague was found in 63 rats killed in the barracks, though of four rats killed in the neighbouring market the spleen of one contained "a plague-like bacillus."

It is to be remarked as characteristic of the disease that convalescence was prolonged, and that where the inflammation of the joints had been severe the convalescents were unable to walk for many weeks. No complications or sequelae were observed.

A. A.

McConnell (R. L.). **A Case of Myositis Purulenta Tropica.**—*Jl. Trop. Med. & Hyg.* 1923. Feb. 15. Vol. 26. No. 4. pp. 57–59. With 3 text figs.

A native was admitted to hospital in Uganda as a case of rheumatic fever, complaining of severe pain in all the large joints and back, with temperature 103°. A fluctuating swelling on the chest was opened and 3½ oz. of anchovy-like pus let out. Between this date, June 18, and July 9, abscesses were opened in the thigh (2), over spine of scapula, the neck (2), the buttock, and similar pus evacuated and the original abscess was twice opened up. On August 15 there were signs of an iliac abscess and on the 19th, in anticipation of its being opened, the patient disappeared. He was seen six weeks later when little was left of the swelling, which had quite gone after a month. An evening rise of temperature occurred throughout, and night sweats were frequent. Filarial larvae were sought in the blood by night and day without success. Objects are figured which were found in pus—two (?) nematode larvae 55–60 $\mu \times 3 \cdot 5$ and $45 \mu \times 2 \cdot 3$ and what appeared to be a coiled worm.

A. G. B.

Howard (Albert), Simonsen (John Lionel) & Anderson (L. A. P.). **A Preliminary Note on Lathyrism.**—*Indian Jl. Med. Res.* 1923. Jan. Vol. 10. No. 3. pp. 857–859. [14 refs.]

The authors have been unable to find any trace of alkaloid in the Khesari grain (*Lathyrus sativus*) either in the fresh state or after storage but have discovered a base or mixture of bases giving the ordinary test

for alkaloids in the seeds of *Vicia sativa* which occurs in all the cultures raised from bazaar Khesari seed. *Vicia sativa* has been already shown to contain a glucoside base named vicine for which divicine is obtained on hydrolysis. They are now examining divicine hydrochloride pharmacologically.

A. G. B.

MENDELSON (Ralph W.). **A Case of Combined Pellagra and Beriberi.**—*Jl. Trop. Med. & Hyg.* 1923. Jan. 1. Vol. 26. No. 1. pp. 6–7. With 1 text fig.

The salient points of this case are these :—

The patient, aged 27, a native Siamese policeman, had been free from illness hitherto ; there was no history of metallic poisoning. On admission to the clinic he complained of difficulty in walking, tightness and numbness in the legs, sore tongue, diarrhoea and an eruption on the hands, feet and scrotum. The tongue was swollen, red with raw patches, very painful. The backs of the hands looked as if they had been painted with iodine ; there were a few bullae and vesicles. The left knee jerk was barely perceptible, the right absent. The feet (illustrated) showed bullae and vesicles. No oedema. "The gait is typical of that of an acute polyneuritis of the lower extremities. . . . The scrotum is quite typical of acute pellagra." (no further details). The pulse was 100–120. No malaria. Blood Wassermann negative.

The author notes that beriberi is common in Siam and especially in the police force ; the staple diet is white, finely polished rice. This, he believes, is the first case of acute pellagra observed in Siam and the chronic disease is rare. No instance of the association of the two diseases is known to him.

[The patient had taken "a few doses of native medicine" and one wonders whether the diagnosis of chronic arsenical poisoning was considered.]

A. G. B.

BRUSA (Piero). **Contributo allo studio del linfogranuloma maligno.** [Contribution to the Study of Lymphogranuloma malignum].—*Haematologica.* 1923. Jan. Vol. 4. No. 1. pp. 1–22. [22 refs.]

The case of a boy, seven years of age, is recorded, with the signs and symptoms of Hodgkin's disease. The axillary, cervical and subclavicular glands were involved, and probably some of those in the mediastinum also. The spleen was enlarged. The child died three and a half years after the first glandular enlargement appeared. Autopsy was refused, but examination of an excised gland revealed the presence of round or oval bodies of varied size (two to six microns), singly or in groups, a few free but more in large cells like endothelial cells. They stained well by Giemsa, better still by Pacinotti's method. Some appeared to be homogeneous, others possessed a chromatin mass, like a nucleus. In some there were two such masses and where this was the case one was larger than the other. The author states that they strongly resemble the "Histoplasma capsulatum" described by DARLING [believed to be a Cryptococcus] and he is of opinion that they are of protozoal nature. All attempts at cultivation proved negative.

H. Harold Scott.

SEN (Satya Charan). **A Case of Broncho-Moniliasis.**—*Indian Med. Gaz.* 1923. Apr. Vol. 58. No. 4. pp. 164–165. [3 refs.]

A Hindu of 58 suffered from fever with enlargement of liver and spleen, and finally broncho-pneumonia. The sputa were milk-white, of the

consistency of glycerine. Thrush-like patches were numerous in the mouth. No T.B. in the sputa but oval yeast bodies and mycelial threads. *B. coli* was grown from the urine and both *B. coli* and the fungus from the sputum. The cultural and biological characters of the fungus are given ; it resembled *Monilia tropicalis* but was harmless to guinea-pigs. No autopsy.

A. G. B.

De Finis (Giuseppina). **L'immunoterapia del tifo, dei paratifi e della febbre mediterranea con i vaccini lisizzati Di Cristina e Caronia.** [The Treatment of Typhoid, Paratyphoid, and Undulant Fevers with Lysed Vaccines of Di Cristina and Caronia.]—*Pediatria.* 1923. Jan. 1. Vol. 31. No. 1. pp. 11–23. [9 refs.]

Brief records in tabular form are given of 90 cases of typhoid fever, their ages varying between 17 months and 25 years, treated by vaccines. The initial dose was 1 cc. intramuscularly or 0·5 cc. intravenously ; thereafter, on alternate days, was given a dose of twice the volume. The diagnoses were made by agglutination or by blood culture —the latter in 26 instances.

Temperature fell by crisis or rapid lysis, in some after the first injection, in the majority after the third or fourth, with marked improvement both in the general state and in individual symptoms. There were no fatalities, though some of the patients were in a serious condition, drowsy and delirious, when treatment was started.

Thirty-five cases of paratyphoid infection are recorded, 10 of Paratyphosus A, 24 of Paratyphosus B, and 1 of both. One died ; he was very ill and emaciated and, in fact, died on the first day.

Of undulant fever there were 55 cases, the organism being isolated from the blood in seven. The acute cases were found to yield usually after three injections, the more chronic required eight to ten. There was never a very marked reaction, and the results seemed to be the same whether the intramuscular or the intravenous route was chosen.

H. Harold Scott.

M'Kendrick (A. G.). **House Infection in Cholera and Cancer.**—*Edinburgh Med. Jl.* 1923. Mar. N.S. Vol. 30. No. 3. (Trans. Med. Chirurg Soc. Edin.) pp. 53–61.

The title of this remarkable paper is misleading ; some instances of house-incidence in cholera-epidemics and in cancer-cases are used to illustrate an argument of very much wider compass. After some criticism of the common notion that the problems of medicine are not the subject-matter of exact science, and after some demonstration that the apparent difference between the science of medicine and the " exact sciences " depends chiefly upon the many accidents of observation in the former, the author goes on to show by specific illustrations how the exactest methods (of mathematics) may be used by the medical observer to give exact and verifiable interpretation to his collected facts. We shall best do justice to the author's argument by reproducing one of his illustrations.

" An epidemic of cholera occurred in an Indian city The total number of cases was 139, and these occurred amongst a population of tens of thousands. The infection was consequently minimal. The city received its water supply from a watershed, some fifty miles distant. The streams collected into a large lake. Contamination in transit was unlikely, the

probable sources of water contamination were in the watershed area. It was calculated that the water took over eight days to pass from this area to the city. Now, in test-tube experiments, the vibrio dies out in two or three days, so it was argued that what was true in the case of the small bulk of water in the test-tube must be true for the large bulk of water in the lake and streams, and hence the epidemic could not be water-borne. I have already dealt with this fallacy.

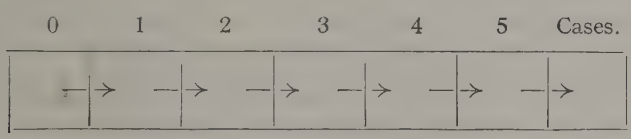
"The problem may be attacked as follows. Let us consider house infection, and tabulate the house distribution of an epidemic at various intervals thus :—

"Houses with :—	0 Case.	1 Case.	2 Cases.	3 Cases.
At first	1,000	—	—	—
Later	990	9	1	—
Still later ..	980	17	2	1

"The houses were at first free, then some picked up their first case. At a still later period some of these passed on to two or three cases, whilst others received their first case—and so on.

"This may be generalised in a diagram.

"Houses with :—



"Any particular house passes from one compartment to the next, and follows the path shown by the arrows, each arrow depicts the chance that a house may receive an infection and pass into the succeeding compartment.

"Now, if a disease be distributed in a random manner, for example by water, these chances or arrows will all be of the same magnitude ; but if the disease is spread by infection, then the arrows will tend to increase (for the chance of a fresh case occurring will tend to increase) with the number of cases which have already occurred in that house.

"The problem is, then, to detect from observations whether the arrows do or do not increase with the number of cases.

"Now those of you who are interested in chemistry will at once recognise that this is a problem of mass action, that is to say, a problem of probabilities. It is like a consecutive unimolecular chemical reaction where the stages are :—

$$A \rightarrow B \rightarrow C \rightarrow D \rightarrow .$$

"The solution presents no difficulties. If we denote the value of an arrow as being approximately $b(1+ax)$, then all that is required is to find the value of a from the statistics. If it is positive, then the arrows will increase with x, the number of cases in the house. If it is zero, then the arrows will be constant, and the distribution is a random one. If negative, the arrows will decrease, and give evidence of some deterrent factor.

"From the solution of the set of equations to which the diagram gives rise, we can also evaluate the total number of individuals (in this case of houses) which participated in the phenomenon. This is very important, because this total is often not exactly known, for example, in the case of water-borne infections, an area may have a number of water supplies only one of which may be contaminated.

"In the case under consideration it was found that the arrows did not increase ; and that, consequently, the distribution was a random one. The most probable random cause was the water supply. Chlorination was introduced, with the result that there followed a reduction in the mortality

from intestinal diseases of a little over 70 per cent., as deduced from statistics contrasting the preceding period of five years with the five years during which chlorination was employed.

"The figures were :—

		Observed.	Calculated.
Houses with 1 case	..	129	128
Houses with 2 cases	..	9	10
Houses with 3 cases	..	1	1

"The results of this experiment are not beyond criticism, but they afford an indication of the power of the method."

A. A.

DELAMARE (G.) & ALALOU. **Pseudosymbiose vibrio-spirochétique (Vibriothrix).**—*Bull. sanitaire de Constantinople.* 1923. Apr. Nos. 11 & 12. pp. 105–108. With 1 plate. [5 refs.]

In the summer of 1922, when cholera and dysentery were rife in southern Russia, the authors observed in smears of peptone cultures of faeces of some Russian refugees some organisms resembling vibrios and some others resembling spirochaetes. These, after due study, they determined to be different forms of one organism—CASTELLANI's *Vibriothrix ceylanica.* The vibrionic (and bacillary) elements predominate in liquid media, the spirillar (and filamentous) elements in the scum. The organism is worth attention on account of its misleading nature. It can be distinquished from the cholera vibrio by the amber or rosy colour of its culture on potato, by the lack of gelatolytic and saccharolytic properties, by the production of indol, and, of course, by its non-agglutination with anticholera serums; and from true spirochaetes by the larger size, readier staining, and facility of aerobic culture on ordinary media.

A. A

TRICOIRE (R.). **Etude de l'association de l'amibiase et du paludisme.**—*Bull. Soc. Path. Exot.* 1923. May 9. Vol. 16. No. 5. pp. 304–308. [6 refs.]

In the region where the author practises, Taza, in Eastern Morocco, amoebic dysentery is common, bacillary very rare, and half the dysentery patients have also malaria. The result is a variety of clinical pictures, sometimes one disease, sometimes the other being in the foreground, and sometimes there are few symptoms but cachexia. Such cases as these form good soil for tuberculosis, to which 6 out of 45 succumbed. The author suggests that there are special reasons for malaria and amoebiasis reacting on one another. At the onset of malaria the liver functions excessively, causing a large flow of bile especially about the 18th hour and the two succeeding days. This is the occasion of the amoebiasis relapse, as a result of a natural "biliary test" such as has been described by LE NOIR and DE FOSSEY [this *Bulletin*, Vol. 19, p. 688]. When amoebiasis arouses malaria it acts like cold, fatigue and the like, or there may be a more intimate link.

When malaria is resistant to quinine, and in well-treated cases the temperature remains irregular, when amoebiasis relapses without obvious cause, when amoebic hepatitis resists emetine, if apart from febrile periods the liver remains painful, suspect the presence of both infections.

In treatment the author gives adrenalin, as well as quinine and emetine either by the mouth or, in bad cases, by injection. Strychinine and cacodylate of soda are useful. The combination of neosalvarsan with emetine has yielded no better results.

A. G. B.

LABERNADIE (V. G. F.) & PEYRE (E. L.). **Importance de l'examen du sang pour le diagnostic du saturnisme.**—*Bull. Soc. Path. Exot.* 1923. May 9. Vol. 16. No. 5. pp. 348–352.

A ship left France on October 31, called at two ports in the French Antilles and on December 14 reached Cayenne. Illness on board was possibly smallpox, so that here a careful examination was necessary. About 12 men were sick, the symptoms being vomiting, violent joint pains and myalgia, prostration, constipation alternating with diarrhoea, violent colic, loss of appetite, thirst; the asthenia was profound. These symptoms had been present most of the voyage and eight men had been put off at the harbours touched. There was nothing pointing to variola. Nine sailors were admitted to hospital, and as a routine measure the blood and stools were examined. In all there were noted red cells with basophilic granulations, which pointed at once to the diagnosis. Burton's lead line was present in five. The proportion of basophile cells increased with the intensity of Burton's line: in cases in which it was 60 per cent. the line was very clear, and where it was 12·5 per cent. or below the line was faint or absent. There were no eosinophiles. Examination of the lining of the ship's saucepans showed the presence of more than 20 per cent. of lead. The authors draw attention to the semblance of these attacks to an epidemic disease. [They do not, however, make clear the source of the lead.]

A. G. B.

TAYLOR (J. A.). **Anthrax in Ankole, Uganda.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1923. Mar. 15 & May 17. Vol. 17. Nos. 1 & 2. pp. 51–54.

Anthrax in man in Uganda, of which a case was reported by PEACOCK and DUKE (this *Bulletin*, Vol. 20, p. 42) and an earlier case by SPEARMAN (*op. cit.* Vol. 10, p. 236), seems to be not altogether uncommon. In November, 1918, seven cases, and in January, 1919, two more cases, were brought to the author's notice in the Ankole district. The first seven cases—in six of which bacilli were found—were traced to a kraal where a cow dead of the disease and full of bacilli was discovered cut up for market: it was discovered also that a cow had died in this kraal about three weeks before, and that six of the patients had eaten, and one had carried, the meat of that animal. Consequent observation of neighbouring kraals disclosed, in the course of a few days, the death of two cows in other herds; smears taken from different parts of one of these all contained anthrax bacilli. As regards the two cases in January, a history was obtained in one of them of the patient having been scratched by a thorn in a kraal that had been vacated some months before in consequence of the death of some of the cattle there.

Inquiries made by the author at that time brought to light the facts that the disease was well known among the cattle-owning Bahima by

the name *kirasi* when a malignant pustule is to be seen, and *obuzimba* when an animal dies suddenly in a herd where a *kirasi* has recently occurred. They have no name for the generalized infection in man, but when a human being suffering from a *kirasi* dies, he is said to have died "of eating obuzimba meat." The Bahima, however, do not eat the meat of an animal deal of *obuzimba;* they bury the carcass deep and cover the sepulchre with thorns, to keep hyaenas from getting at it and spreading the infection.

A. A.

GREGG (A. L.). **Two Abnormal Cases of Pigmentation of the Colon.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1923. Mar. 15 & May 17. Vol. 17. Nos. 1 & 2. pp. 72–76. [4 refs.]

In the course of more than 300 hospital examinations of the bowel by sigmoidoscope the author has only twice observed pigmentation of the colon. This condition has, indeed, been described in post-mortem observations, and has been ascribed to absorption or deposition of lead, mercury, and bismuth. In both of the cases observed by the author the patients had at some time been treated with bismuth, but many of the other 300 patients had taken bismuth freely, so that if this pigmentation can be caused by bismuth there must also be some other concomitant causal factor. The pigmentation is described as a fine black mottling.

A. A.

LEVADITI (C.) & NICOLAU (S.). **Mode d'action du bismuth dans les trypanosomiases et les spirilloses.**—*C. R. Acad. Sci.* Paris. 1923. Apr. 23. Vol. 176. No. 17. pp. 1189–1192. [5 refs.]

Levaditi and YAMANOUCHI in 1908 showed that atoxyl, which is inactive in vitro, becomes strongly trypanocidal when brought in contact with a fresh extract of liver at 37°; an observation which suggests that atoxyl and similar remedies undergo changes in the organism before becoming parasiticidal. The authors made similar experiments with bismuth, mixing a solution of tartrobismuthate of sodium and potassium with an extract of rabbit's liver, and after an interval adding Nagana trypanosomes or *Spirochaeta gallinarum*. The parasites were first immobilized, then killed in the liver mixture, whereas in control mixtures they were unaffected. Kidney, lung, mesenteric glands, suprarenals, ovary, brain and muscle had the same action in varying degree as liver; blood, serum, eggs and yeasts were inactive. The liver of fowl, guinea-pig, rat, horse, sheep or calf may be substituted for that of rabbit. They call the compound formed *bismoxyl.* Other bismuth salts can be used and even metallic bismuth undergoes some transformation. The quantity of bismoxyl formed depends on the quantity of liver extract. The protein substance of the extract is chiefly responsible; the parasiticidal property is found in the albuminoid precipitate which forms on standing. Collected and washed it keeps this property for 17 days. If the mixture is dialysed the property is found in the dialysate when every trace of bismuth has disappeared from it. It is concluded that a toxalbumin is formed which when absorbed by the parasites kills them. Reference is made to similar experiments with atoxyl and with tartar emetic.

A. G. B.

PERALTA (Daniel), M'ACORMICK (David D.), CARVAJAL (Martin), PRADILLA GONZALEZ (Francisco), GOMEZ (Andres), VALDIVIESO (Julio), SERPA (Roberto) & ARDILA GOMEZ (Luis). **La epidemia actual de Bucaramanga [Colombia].**—*Repert. de Med. y Cirug.* 1923. May. Vol. 14. No. 8. (No. 164.) pp. 301–331.

The authors describe in detail cases of a disease which in almost every particular corresponds with yellow fever, both clinically and in the post-mortem findings. The diagnosis is discussed fully, especially as between yellow fever and epidemic jaundice, and it is concluded that the disease is probably the former ; 80 per cent. of cases, however, are mild and the case mortality is only 15 per cent. The Department of Health strenuously denies the possibility of there being a focus of yellow fever at Bucaramanga ; hence this paper to bring the question into prominence.

H. Harold Scott.

PERRY (H. M. J.). **A Staple Haemolytic Serum for Use in the Wassermann Reaction in Tropical Climates.**—*Jl. Roy. Army Med. Corps* 1923. June. Vol. 40. No. 6. p. 456.

This communication by Lt.-Col. Perry, O.B.E., states that the dried (soloid) haemolytic serum made by the Wellcome Laboratories had been found to withstand prolonged high temperature with little decrease in value. It had not been possible, however, to maintain a supply of uniform quality. Dr. O'BRIEN, Director, Wellcome Physiological Laboratories, has now produced a glycerinated serum which under experimental conditions has remained unchanged for periods of three months at 37° C.

Dr. O'BRIEN has supplied the following data :—

Experiment 1. Original serum titre 2,400.
After incubation at 37° C. for 3 months.
Titre of glycerinated serum 2,400.
Titre of ordinary serum 200.

Experiment 2. Original serum titre 3,000.
Titre of glycerinated serum 2,300.
Titre of ordinary serum 375.

Experiment 3. Original serum titre 3,700.
Titre of glycerinated serum 3,500.
Titre of ordinary serum 1,000.

Samples of glycerinated haemolytic serum have been tested at R.A.M.C. College and found to be satisfactory. It is suggested that when haemolytic serum for laboratories abroad is ordered the glycerinated product be requested.

H. M. Hanschell.

i. LANCET. 1923. Aug. 4th. pp. 235–236. [Leader.]—**Precipitation Tests for Syphilis.**

ii. JOFFICK (S. D.). **Practical Suggestions for performing the Sachs-Georgi Test for Syphilis.**—*China Med. Jl.* 1923. May. Vol. 37. No. 5. pp. 372–381. [22 refs.]

iii. COCHRAN (Samuel). **A Simplified Precipitation Test for Diagnosis of Syphilis.**—*Ibid.* pp. 382–387. [2 refs.]

i. The Lancet in a leading article reviews briefly the principles of the precipitation tests for syphilis first introduced by SACHS and GEORGI.

In the endeavour to elucidate the mechanism of the Wassermann test it became apparent that under many conditions syphilitic sera would give precipitates more readily than would normal sera. The Wassermann test, one of the most trustworthy of all clinical pathological diagnostic measures, consists of two parts. In the first, syphilitic serum and antigen are brought together in the presence of complement; and in the second, the existence, or disappearance, of this complement is sought for by adding red blood corpuscles and the appropriate haemolytic serum. *The essential of the test* is the production of a precipitate between the syphilitic serum and the antigen, which is a colloidal suspension of lipoid particles.

In the presence of syphilitic serum the physical state of this colloid differs in only partially known fashion from its state in the presence of normal serum, and in the former case it is particularly favourable to the adsorption and inactivation of complement, which thus disappears from the mixture so far as its subsequent demonstration is concerned. If we could detect this alteration in the antigen visually, we could dispense with complement, haemolysin and blood cells, not only simplifying the test but probably making it more accurate. Is the visual method as delicate a one for detecting the formation of a precipitate between serum and antigen as is the fixation of complement? On the answer to this depends the form of serum test for syphilis to be adopted in the immediate future. It is already abundantly proven that a strongly positive Wassermann reaction corresponds to a strongly positive precipitation test; but in both cases shading off from the positive into the negative is not an abrupt process. Research should be directed towards the weakly positive, the evolving and declining cases. *Comparison of the two tests with the clinical condition,* which must always be closely watched, will yield information of the most value as to their relative merit.

ii. Dr. Joffick begins, significantly, the account of his very careful, interesting and well documented work, with the admonition to bear in mind that the Sachs-Georgi test is not so simple as it at first appears. The slightest mistake in technique may give rise to false results. His paper gives in clear detail and at length, the special titrations and experiments and the final technique developed therefrom by which more constant results with Sachs-Georgi may be obtained. The detail of preparation and standardization of reagents and the method of their use, are in each instance all-important, and unfortunately his account of these procedures cannot usefully be summarized. After testing several thousand sera by his technique Dr. Joffick emphasizes the fact that the Sachs-Georgi test even though giving very specific results in the hands of experienced workers, cannot yet replace the Wassermann test. It is an excellent test with which to check the Wassermann results and in some cases will give a specific strongly-positive reaction where the Wassermann has given a weakly positive, a doubtful, or even a negative result. There are, however, also cases where the Sachs-Georgi fails to give a positive reaction with a syphilitic serum. He closes the paper by quoting Craig—"The interpretation of the results of the Wassermann test must rest very largely with the clinician, for the clinical picture present is often more decisive than is the result of the test, and it is the clinician's place to reconcile the result of the test with the clinical picture, rather than the serologist's." Dr. Joffick agrees with this opinion and applies it equally to the Sachs-Georgi test.

iii. Dr. Samuel Cochran differs from Dr. JOFFICK to the extent in being rather seized by the simplicity of the Sachs-Georgi flocculation test. Nevertheless he states that up to the present none of the many modifications of the Sachs-Georgi test is so reliable as to replace the Wassermann in places where the latter can be performed. [The reviewer cannot refrain from asking: Does any set of circumstances or any place justify the use of an unreliable test for purposes of clinical aid—apart from investigation as to the limits of its reliability as compared with other methods?].

Dr. Cochran's simple technique is as follows :—

Antigen, alcoholic beef heart extract made in the manner customary for Wassermann tests; incubated at 37° C. for one or two weeks, being shaken once or twice daily; at end of this time filtered, and kept in amber coloured bottles at room temperature in a dark place. This and 0·85 per cent saline solution are the only reagents used.

Blood Serum for testing is inactivated at 57° C. for 30 mins. It should be clear, free of red blood cells and not tinged with haemoglobin.

Preparation of antigen suspension. 0·5 mil of antigen in a 1-mil pipette is passed to the bottom of a large test tube containing five mils of saline solution. The antigen is expelled by quick expiration; the object being to make a sudden and complete mixing of the antigen in the suspension fluid; there should result a clear slightly-whitish opalescent fluid.

Test: take 2–10 mil. of inactivated serum in a capillary pipette and introduce it to the bottom of a 6×75 mm. test tube; overlay it with an equal volume of antigen suspension, so as to secure a sharp line of demarcation; put aside for 10 mins, where it will not be jarred, and examine.

A white ring appearing at junction of fluids signifies a positive result, and no further observation is necessary. If after 3 hours at room temperature no ring has appeared the result is negative.

Notation—plus=distinct ring; plus-minus=fine ring; minus=no ring at all.

Precautions. (1) Serum must be clear and not contaminated.
(2) Light must be suitable.
(3) A sharp line of contact between the fluids must be secured.

As a routine each test was done in duplicate using two different antigens as controls for each other. Usually the two tubes gave similar testimony but *not infrequently* dissimilar—causing doubt as to the verdict. Controls necessary are known positive and negative sera.

This test was performed on over 2,000 sera: and after analysing results Dr. Cochran concludes that :—

(1) The precipitation test is in the main in close accord with the Wassermann.

(2) It is a valuable adjunct to the Wassermann as a routine procedure. It sometimes calls attention to syphilitic sera that the Wassermann misses.

(3) It is simple and quickly performed.

(4) However, though agreeing with the Wassermann in 93 per cent. of tests, where disagreement occurred *the Wassermann was in closer accord with the clinical diagnosis.*

We may point out, now, that all leads to the patient and the clinician as the ultimate sanctions of the trustworthiness of the test. Clinical observation and knowledge is still indispensable for the serologist.

H. M. Hanschell.

i. BARRETT (James W.). **The White Man in the Tropics.** [Correspondence.]—*Brit. Med. Jl.* 1923. Feb. 10. p. 260.
ii. ——. **White Australia Policy.**—*United Empire.* 1922. Nov. Vol. 13. (New Series). No. 11. pp. 679–683.

i. After pointing out that Tropical Australia is divisible into four portions, viz. the East Coast of Queensland, the interior plateau of Queensland, the Northern Territory, and the Northern portion of Western Australia, each with characteristics of its own, the author points out that practically the whole of Australia enjoys a mean temperature of less than 70° wet bulb. According to the Commonwealth Statistician the population of Tropical Queensland increased by 15·28 per cent. in the decennium 1911–21 as against 9·1 and 19·1 per cent. for rural and urban areas in the Commonwealth as a whole ; and for the years 1918–20 the general mortality and infantile mortality rates for Queensland were 11 and 64, both extraordinarily low. The physique of the Queensland men compares favourably with that of other parts of Australia. The poor health of the women is in part at least attributable to the defective housing and sanitation, but in spite of this a vigorous white race is being developed. It is also to be noted that tropical diseases are few. As to the Northern Territory and its comparative emptiness—the population is under 4,000—the Chinese do not remain there owing presumably to the poverty of the country and the 5–7 months drought. Its settlement is therefore an economic rather than a climatic problem. This part of Australia will not fill till the southern parts are crowded.

ii. After drawing attention to the facts cited above, the author asks for valid reasons for the belief that coloured people suffer less than white people from heat. He thinks that the chief difference between the races is that the coloured man adapts himself to the climate by discarding his clothing.

A. G. B.

CHEYNE (W. H. W.). **White Settlement in Tropical Australia.**—*Jl. Trop. Med. & Hyg.* 1923. Mar. 1. Vol. 26. No. 5. pp. 71–81. With 8 figs. [19 refs.]

To those interested in the " Tropical Australia " question this paper is well worth perusal though it does not add anything essential to what has already been published [see this *Bulletin*, Vol. 17, p. 223 ; Vol. 19, p. 525]. The author points out that Tropical Australia has two climates; the coastal, damp and truly tropical and the hinterland, better called subtropical. The hinterland, about 1,000 feet in altitude rises into three plateaux of over 2,000 feet of an average area of 12,000 square miles, one of which, near Cairns, is now being settled and is quite healthy. The conditions of rainfall and temperature, dry and wet bulb, in these several regions are discussed with illuminating diagrams. Rainfall varies between 165 inches at the edge of the Atherton plateau and less than 10 inches in the interior. On the question of settlement it is pointed out that there is no large native population—the total number of aborigines in the whole of Australia does not exceed 100,000—and sun-stroke is almost unknown. In the hinterland tropical diseases are negligible ; in the coastal area malaria, hookworm, filariasis, dengue, occur : *Stegomyia fasciata* is very common ; trachoma and barcoo rot (a form of veldt sore) are found. None of these diseases is serious in Australia.

The author reaches the conclusion that there appear to be no scientific reasons why white people should not successfully inhabit the north, but three or four generations of whites born, bred and intermarried in the tropics must pass before the matter can be decided. It is doubtful whether the northern lands are fitted for close white settlement owing to the prolonged droughts but irrigation may solve this difficulty.

A. G. B.

i. RODENWALDT (Ernst). **Die Mestizen von Kisser und die Frage der Akklimatisation der europäischen Rassen an das tropische Klima.**—*Arch. f. Schiffs- u. Trop.-Hyg.* 1923. July. Vol. 27. No. 6. pp. 202–205.

——. **The "Mestizos of Kisser" and the Problem of Acclimatization of the European Races in the Tropics.**—*Med. Jl. Australia.* 1923. July 7. 10th Year. Vol. 2. No. 1. pp. 6–8.

ii. ELKINGTON (J. S. C.). **The Mestizos of Kisar.**—[Correspondence.]—*Med. Jl. Australia.* 1923. July 21. 10th Year. Vol. 2. No. 3. p. 81.

i. The author, who writes from Java, wishes to controvert the statement that the Mestizos of Kisser are a white race acclimatized to the tropics, and to criticize a paper by ELKINGTON [who is in the German version miscalled EDINGTON], (see this *Bulletin*, Vol. 20, p. 14). ELKINGTON has erred in implying that any of the Joostencz family were pure-bred—they were all hybrids with the exception of the Dutch father who came to Banda in the first half of the 18th century, and all married hybrids or natives; and in stating that the colony is subject to malaria, for it is malaria-free; and he is ten years out in a date.* [ELKINGTON, however, allows the mixture of blood, so that the issue between the two authors is its degree. Rodenwaldt describes the Kisserese as having more coloured blood than European.]

ii. Elkington writes that he obtained his information from the Dutch Resident at Koepang, and it gave the detailed genealogical trees of the several families. RODENWALDT's statement that malaria is absent from Kisser is "flatly and totally incorrect".

A. G. B.

MACKINNON (Murdoch). **Education in its Relation to the Physical and Mental Development of European Children of School Age in Kenya.**—*Jl. Trop. Med. & Hyg.* 1923. May 1. Vol. 26. No. 9. pp. 136–140. With 2 charts in text.

From the study of upwards of 500 children born and reared in the highlands of Kenya (5,000–6,000 feet) the author concludes that the general physique is much above that of children at home. He gives two curves of height and weight respectively showing the average annual increase between 6 and 17 years for boys and girls in Kenya and England. Kenya children according to this comparison are taller

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* The author writes:—"The original article was not at my disposal. I relate to the detailed reference in the *Tropical Diseases Bulletin*, January, 1923, page 14. The numerous mistakes in the dates may be put down to the reference."

This is not the case. The dates in the *Bulletin* correspond exactly with those in ELKINGTON's paper.—ED.

than English children till 15, when the English boy passes the Kenya girl but the Kenya boy keeps ahead all the time. Similarly the Kenya children are heavier than the home children at every age except at 12 and 13 when the Kenya boy falls back. The author would attribute this difference in stature and weight partly to the stimulating effect of warmth and light but also to the very liberal and varied diet of the Nairobi school where special attention is paid to vitamins. He gives the daily ration with the caloric value of its items, a total of over 3,400 calories, "equal to what is considered necessary for a hard working man in a cold or temperate climate".

Children born in Kenya or reaching it at an early age develop a degree of mental alertness far superior to that of children of a similar age in a temperate climate, but after the age of 10 a gradual process of mental exhaustion and deterioration sets in, coinciding with rapid increase in height and weight. Dividing the mental faculties into the power of reception, retention and application he finds that at Nairobi the first is remarkably good, the second fails—one of the most striking effects of tropical climates on the nervous system is to impair memory—and the application fails with the retention ; the child cannot apply his knowledge on demand. Children who have left school before twelve and gone to Europe have done well but those who remain fail to qualify for such examinations as the London Matriculation and the Cambridge Junior. He thinks that climate is the main cause of the mental deterioration and that altitude is beneficial rather than injurious, but part of the climate seems to be man-made for "the temperature in the class rooms" in a wood and iron building "is so high that it is quite impossible to expect children to concentrate their attention". His advice to the Kenya government, therefore, is not to build secondary schools but to encourage by such methods as scholarships the sending of children home after ten to complete their studies in England.

[The author does not give the source of his data for English children so that one is left in doubt whether their diet was equally liberal both in quantity and quality.]

A. G. B.

FÜLLEBORN (F.). **Prof. Arthur Looss.** [Obituary.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1923. Aug. Vol. 27. No. 7. pp. 225–228. With 1 plate. [2 refs.]

On the 4th May, after long and grievous suffering of mind and body, the distinguished parasitologist Looss died at Giessen. We learn from this brief record of the principal events of his life that he was born at Chemnitz, in Saxony, in 1861, that, as a young man, he studied for four years under the eminent LEUCKART, in Leipzig, and that at the age of 30 he married. In 1896 he was appointed Professor of Biology and Parasitology in the British School of Medicine at Cairo, where he is said to have worked under "primitive" laboratory conditions and without skilled assistance [as was the lot of all biologists in the East in those days]. There, indefatigable, he remained 18 years, and there he made his ever memorable discovery of the usual mode by which the hook-worm reaches its host's intestine through the host's integument. In the fateful year 1914 Looss had to leave all and follow an unkind fate [for which ultimate responsibility cannot be laid upon England]. He had to go back, unhonoured, to his native land, where, for want of any better means of subsistence, he eventually had to become an

assistant in the Zoological Institute, at Giessen, and there he died in poverty and affliction.

The chronicler of this sad instance of the mutability of human affairs does not overstate the case when he claims that Looss, in the course of his investigation of the life history of the hookworm, made one of those pregnant discoveries that are no less prolific in the world of ideas than stimulative in the field of practice.

A. A.

LESSA (Gustavo). **O valor da desinfecção terminal. (Esboco do estado actual da questão.)**—*Boletim Sanitario.* Rio de Janeiro. 1923. No. 2. 25 pp.

It would appear that public and even professional prejudice in some parts of South America puts implicit faith—as indeed it still does among the half-educated in many parts of Western Europe—in chemical disinfection as *the* infallible method of protection against the spread of disease from infected premises. The purpose of this paper is to set forth the approved experience of sanitary authorities in the most enlightened parts of the world ; this experience being that the generality of specifically pathogenic micro-organisms are carried about in or on specific living " carriers," apart from which they cannot live long and pullulate ; and consequently that, so far as premises that have harboured infectious cases are concerned, the best, as well as the cheapest and most educative, disinfectants are continuous fresh air, sunlight, and the freest personal and domestic use of soap-and-water and the scrubbing-brush.

A. A.

RODENWALDT (Ernst). **De biologische toestand van de bevolking van het eiland Soemba.** [The Biological Condition of the Population of the Island of Soemba. D.E.I.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1923. Vol. 63. No. 3. pp. 448–464. [1 ref.]

From official figures Rodenwaldt calculates that in several districts of Soemba there exists a considerable surplus of men, whilst the number of children in comparison to the adults is abnormally low. The condition is very marked in the eastern parts of the island, not so pronounced in West Soemba. In looking for causes of this menacing and uncommon phenomenon in an uncivilized population the author attaches much importance to bad sexual habits and fear of the tortures women have to undergo during pregnancy and after childbirth in connection with the " adat " (*i.e.* the unwritten law of the natives of the E. I. archipelago, often founded on religious belief). When interrogated the women would not admit such fear, but the author thinks that it is a strong incentive to criminal abortion. On the other hand yaws may have an inhibiting influence on the birth-rate. Venereal diseases are not widely spread.

W. J. Bais.

KOUWENAAR (W.). **Over voorkomen en beteekenis van occult bloed in de faeces bij tropenbewoners.** [The Occurrence and Significance of Occult Blood in the Faeces of Inhabitants of the Tropics.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1923. Vol. 63. No. 3. pp. 419–441. With 1 text fig. [16 refs.]

The author tried different tests for hidden blood in the faeces and found the catalytic reactions useless, on account of the frequent

occurrence of non-specific reactions, and of the numerous cases in which only iron-free, non-catalytic derivatives of the blood (porphyrines) were found in the stools. The spectroscopic examination, the technique of which is described in detail, is the only trustworthy test in this respect.

The most remarkable result of the author's experiments is that hookworms cause a constant and considerable loss of blood by the intestinal way, which stops after the worms have been expelled. He is of the opinion that hookworm anaemia may be caused by this loss of blood only, without influence of the hypothetic toxin of the worm.

W. J. Bais.

De Langen (C. D.) & Djamil (Mohd.). **Idiopathische hypereosinophilie.**—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1923. Vol. 63. No. 3. pp. 406–418.

In a native (Malay) patient suffering from asthmatic attacks, the number of leucocytes varied from 12,000–26,000, whilst the percentage of eosinophiles was 75–85. There was none of the well-known causes of hypereosinophilia to be found, apart from the fact that these causes do not produce such high percentages of these cells. Artificial fever (injections of milk and turpentine) caused a temporary drop of the eosinophile percentage.

W. J. Bais.

Bengston (Ida A.). **A Toxin-producing Anaërobe isolated principally from Fly Larvae. Its Relation to the Organisms hitherto known to be Causative Factors in the Production of Botulism.**—*Public Health Rep.* 1923. Feb. 23. Vol. 38. No. 8. pp. 340–344. [6 refs.]

A comparative study of a toxic anaerobe, originating from maggots, that produced in laboratory animals the same effects as types A and B of *Bacillus botulinus*. The material studied consisted of cultures of single cell isolations from larvae of *Lucilia caesar*, *Lucilia sericata* (*apud* Aldrich), *Lucilia sericata* (*apud* U.S. Museum), and three unnamed species—all the strains of larvae having some original connexion with "limber neck" chickens, except one strain from a horse that died with symptoms of botulism; this fly-material was compared with American strains of type A *botulinus* and type B *botulinus* and with two strains of *botulinus* derived originally from Berlin. The most conspicuous cultural difference observed was that the organism from fly larvae (like one of the strains of Berlin origin) was not—or only feebly—proteolytic. Then the toxin of the fly-larva organism was not neutralized by type A or type B *botulinus* toxin, and conversely the antitoxin of the fly-larva organism did not protect from one M.L.D. of type A or type B *botulinus* toxin. The organism from fly larvae that produces the effects of *B. botulinus* on laboratory animals must therefore be styled type C.

A. A.

Corlette (C. E.). **On Some Relations of Climate, Weather and Fat Covering to Metabolism.** *Med. Jl. Australia.* 1923. Feb. 17. 10th Year. Vol. 1. No. 7. pp. 172–182. With 1 graph. [14 refs.]

The author complains that medical men of every degree have taken but little interest in "the study of metabolism on its dynamical side." If this paper is meant to stimulate the profession it is to be feared that it will fail

of its intention. The reviewer has toiled at it for several hours, but is unable to find any particular connexion between its title and its contents, any coherence in its argument, or any attempt to demonstrate any conclusions or define any objective.

A. A.

GOBERT (E.). **Le Kohl.**—*Arch. Instituts Pasteur de l'Afrique du Nord.* 1923. Vol. 3. No. 1. pp. 90–93. With 1 fig in text. [2 refs.]

The antimonial cosmetic used by Orientals to impart a voluptuous languor to the eyes is known as *Kohl* in North Africa, where, in places mentioned by the author, it is made by mixing finely powdered antimony ore with powdered pearl or coral and pulverized incinerated bat, the living bat having been plunged in hot oil and fried to a cinder.

The chief impurities in the antimony ore are lead, iron pyrites, and silica, and it is thought that the sharp grains of silica may damage the palpebral conjunctiva and predispose to infection, particularly trachoma.

A. A.

HUNT (D.) & HUMPHREYS (L.). **Samoan Tattooing.**—*U.S. Nav. Med. Bull.* 1923. Mar. Vol. 18. No. 3. pp. 346–348. With 5 illustrations.

Samoan tattooing instruments are made of bone and have an edge like a fine-tooth comb; the usual pigment is burnt candle-nut. The area tattooed extends from the loins to the knees, and the operation may take any time from three or four days to two or three weeks according to the fortitude of the patient. Inflammation and fever follow the operation. Sometimes the skin sloughs, and scars and even deformities may then be the result, and occasionally the consequences are fatal. The operator is a professional, held in high esteem; an operator sometimes gets keratitis from pigment spirting into his eyes and as a consequence he may even become blind.

A. A.

MENDELSON (Ralph W.). **Natural Immunity to Infection and Resistance to Disease, as exhibited by the Oriental, with Special Reference to Siamese.**—*Philippine Jl. Sci.* 1923. Feb. Vol. 22. No. 2. pp. 115–125. With 2 charts in text.

Five years experience of Siam, if it has vividly revealed to the author the vast gulf that lies between the hygienic precept of the West and the settled insanitary unconcern of the East, has also led him to the solacing conclusion that Orientals, particularly the natives of Siam, possess a compensating endowment of natural immunity against microbial infection and of insusceptibility to its consequences.

Instances of indifference to traumatic shock are familiar to all who have practised in the East, but can hardly be surpassed by the one described by the author—of a young woman who, after being hacked about the abdomen until the viscera were prolapsed and wounded, and then being wrapped in a sheet and stuffed in a jar and so consigned to the canal, made an uneventful recovery after she had been rescued and brought to hospital, where, before her wounded viscera could be repaired and replaced and her abdomen closed, half her omentum had to be amputated.

As illustrations of insusceptibility or indifference to microbial infection the author gives the following:—

Among thousands of patients treated at one of the Bangkok hospitals the author has met with but two cases of typhoid fever, although in a series of 600 Widal tests 15·5 per cent. were positive. Bacillary dysentery is comparatively rare, and though amoebic dysentery is significantly common the author has observed only four cases of liver abscess. Smallpox in unprotected persons is not frequent nowadays in Bangkok, and the cases are mild. Although plague has been endemic for many years there have been since 1904 only 1,722 cases in a population of over 600,000. In a single year there were four recoveries (under treatment, of course) out of seven cases of fully-developed tetanus. Primary and secondary syphilis are rampant, but tertiary affections of the nervous system are extremely rare : the virus of the locality, however, is fully potent against Europeans. In malaria again, though infection may be demonstrated in 20 per cent. of patients attending clinics, the author has seen but eight cases of cerebral malaria, one of them being a multiple neuritis.

From his observations of cholera the author constructs a more elaborate argument : in Bangkok the population of the eastern side of the river is supplied with pure water by modern plant, whereas that of the western side drinks the liquid iniquity in its native sources ; naturally the percentage of cases and of deaths from cholera in the last epidemic was much higher on the unblest western side, but yet the case-mortality was somewhat higher on the eastern side. [But here the line of argument becomes deflected.]

Even in the case of tuberculosis " a corrected pulmonary death-rate of 9·5 per cent. is not to be considered alarming under existing conditions " of insensibility to the elemental truths of sanitation.

The author in all his observations is specially impressed by the insusceptibility of the nervous system, and the more so because in beriberi, which stands apart as a deficiency disease, the nervous manifestations are conspicuous in Siamese cases.

A. A.

CASTELLANI (Aldo) & Taylor (Frank E.). **Further Researches on the Identification of Inulin and Maltose, by a Mycological Method. Cases of Maltosuria.**—*Jl. Trop. Med. & Hyg.* 1923. Feb. 15. Vol. 26. No. 4. pp. 59–62. [4 refs.]

In previous papers the authors have described a mycological method for the identification of various carbohydrates. Here they apply this method to the determination of inulin and maltose. Thus, *Monilia macedoniensis* Castellani ferments inulin with large production of gas ; since it is one of the few organisms which affects this sugar, it is only necessary to inoculate tubes containing the doubtful substance, one with *M. macedoniensis*, another with an organism which does not ferment inulin to determine whether inulin is present. Similarly with maltose. The authors have seen several cases of maltosuria and describe one in a teaplanter who had a reducing substance in his urine and had been told he had glycosuria.

A. G. B.

ROY (Ashutosh). **The Merits of the Ayurvedic System of Medicine.**—*Indian Med. Gaz.* 1923. Feb. Vol. 58. No. 2. pp. 66–68.

The author, who is a practitioner of western medicine, expresses the opinion that at certain points, particularly in the first principles of pathogeny, in pharmaceutic material, and in dietetic therapy, the

Ayurvedic system of medicine is not surpassed, to say the least, by modern systems.

As regards the first point he tells us that, according to the Ayurved, health is the result of concord, disease the expression of discord, between *vayu*, *pittya*, and *kaphya*, and—though here his language is uncertain —that *vayu* represents the nervous system (both axial and sympathetic) and that pittya and kaphya are antagonistic humours, which humours he identifies with hormones. "The theory and practice of Ayurvedic medicine may therefore be summed up in one chapter only of scientific medicine dealing with the sympathetic endocrine system."

As regard the second point, he gives chaulmoogra oil as an illustration of the more reasonable proposition that the Indian materia medica includes, and possibly in considerable number, drugs worthy of more extensive use in medical practice.

The dietetic management of particular disease in the Ayurvedic system is a subject fit for study by western practitioners; its importance is widely and deeply realized in India.

A. A.

FLEISHER (Moyer S.) & WACHOWIAK (M.). **The Presence of Yeast-Like Bodies in the Blood of Human Beings.—A Preliminary Report.** —*Amer. Jl. Trop. Med.* Baltimore. 1923. Jan. Vol. 3. No. 1. pp. 59–68. With 4 figs. [11 refs.]

The authors state that they have found yeast-like organisms in the blood, as well as in the faeces, of three patients suffering from chronic diarrhoea. One of the cases had been definitely diagnosed as sprue, the other two did not show any of the characteristic signs of sprue and had been conjecturally relegated to tuberculosis. The organisms in each of the three cases, and from both sources, were cultivated in Sabouraud's test media; "a considerable time" (one to three weeks) was required for any conspicuous growth. Cultures were administered to rabbits, either in food or by stomach-tube, in considerable quantities. Of eight (2+3+3) rabbits so treated six are stated to have suffered more or less from diarrhoea, which in one case was fatal, while the other two died, presumably after diarrhoea, though it is not so stated; the organisms were recovered both from the blood and the faeces (or intestine) in five of them, from the intestine only in two, and from lung and liver and intestine in one.

The organisms of the three original human cases are not quite identical but differ in shape and also in the character of the mycelium that they all form.

[The original material in the first case consisted of "a specimen of stool" and "a blood culture taken at the same time"; in the other two cases nothing is said as to how the material examined was obtained. Furthermore, nothing is said of any "control" of the conditions of the feeding experiments.]

A. A.

MACFARLANE (H. N.). **Acute Abdomens in Natives.** [Correspondence.] —*S. African Med. Rec.* 1923. May 26. Vol. 21. No. 10. pp. 238–239.

In Basutoland in 1922, 270 abdominal operations were performed, of which 109 (64 native) were for appendectomy, 24 for hysterectomy, 54 for removal of ovaries and tubes and 10 for radical cure of hernia.

The large number of appendix cases may be due to civilization or surgical opportunity, but it does not support the opinion that appendicitis is rare in natives. The author finds that the "native abdomen" behaves in much the same way as the European.

A. G. B.

ROBINEAU. **L'administration du néosalvarsan chez les enfants par la voie rectale.**—*Ann. de Méd. et de Pharm. Colon.* Paris. 1923. Jan.–Feb.–Mar.–Apr. Vol. 21. No. 1. pp. 75–76.

Owing to the difficulties of intravenous or intramuscular injection in children the author gives neosalvarsan to them by the rectum. He uses a 2 cc. glass syringe and a No. 12 red rubber catheter shortened to 12–15 cm. The neosalvarsan solution is 1 : 10. Care is taken not to admit air and to inject slowly. No fluid has ever been returned. Twenty-one children have received 115 injections without mishap and with results not inferior to those of intravenous injection.

A. G. B.

LAMSON (Paul D.) & MCLEAN (A. J.). **The Toxicity of Carbon Tetrachloride in Relation to Liver Function as Tested by Phenoltetrachlorphthalein.**—*Jl. Pharm. & Experim. Therap.* 1923. May. Vol. 21. No. 4. pp. 237–246. With 3 figs. [17 refs.]

Since cases of intoxication by carbon tetrachloride have been reported, usually in chronic alcoholics and after a lapse of 36–48 hours, the authors made experiments on dogs to ascertain the minimum toxic dose, making use of the liver test of ROSENTHAL (1922), in which the rapidity of disappearance of phenoltetrachlorphthalein from the blood plasma is used as an index of hepatic function. They found that single doses of 4 cc. of carbon tetrachloride per kilo produce functional disturbance of the dog's liver with complete return to normal within 96 hours. Signs of intoxication could be observed before there were any visible signs or symptoms. Administration of 2 cc. per kilo produced no demonstrable disturbance of liver function. Finally, the 4 cc. dose given divided at 48-hour intervals was found to have no toxic effect, which is contrary to the belief that divided doses are more toxic than a single massive dose.

A. G. B.

KNIPPING (H. W.). **Ueber die Wärmebilanz des Tropenbewohners.** [The Heat Balance Sheet of the Tropical Resident.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1923. June. Vol. 27. No. 5. pp. 169–178. [28 refs.]

The importance of this question for colonists is obvious, and its scientific interest is signalized by the extensive bibliography appended. The author summarizes his observations by saying that the physical work capable of being performed is the same whether the workers are Europeans or those born in the tropics. The colour of the skin makes no difference in the heat balance sheet. The actual amount of work performed by Europeans or black people in different climates is another question and is not discussed. It is difficult to believe that the pigmented skin is not more favourable to existence in hot climates. Although black skin reflects less than half the amount of rays than does white skin, the author believes that this is compensated for by more ready loss of heat. No reference is made to Leonard HILL's work on this question.

Barring this difficulty nothing is advanced in this paper which militates against the usual physiological tenets on the question. The moisture and movement of the atmosphere which the author alludes to are undoubted factors in the regulation both of body heat and metabolism.

W. D. Halliburton.

MÜLLER (H.). **The Aorta of Malay Men.**—*Meded. Burgerlijk. Geneesk. Dienst in Nederl.-Indië.* 1922. Pt. 3. pp. 167–185. With 2 diagrams. [19 refs.]

From the examination in Java of 110 corpses of Malays, which term includes Javanese, Sundanese and Madurese, the author concludes that the aorta of Malay men is much too narrow both relatively and absolutely in proportion to bodily height and weight of heart when compared with European measurements and gives a series of tables and charts in support of this statement. He speaks of a "physiological hypoplasy of the blood-vessels." He suggests that status lymphaticus may be frequent in Malays and notes that it is so in the Philippines (CROWELL), the inhabitants of which much resemble Malays: in these cases the size of the aorta was "below normal."

A. G. B.

CHOPRA (R. N.), in collaboration with GHOSH (Sudhamoy), GHOSH (B. N.) & DE (P.). **The Pharmacology and Therapeutics of** *Boerhaavia diffusa* (**Punarnava**).—*Indian Med. Gaz.* 1923. May. Vol. 58. No. 5. pp. 203–208. With 7 graphs and 3 charts. [5 refs.]

Boerhaavia diffusa is a troublesome weed in India, used for dropsy in indigenous medicine from time immemorial. As a result of their experiments on animals and administration to 34 cases of oedema and ascites, notes of five of which are given, the authors reach these conclusions:—

The active principle is an alkaloid named *punarnavine*; the plant contains also large quantities of nitrate of potash and other potassium salts. Intravenous injection of the alkaloid in cats produces a persistent rise of blood-pressure and marked diuresis, due mainly to action on the renal epithelium, though the rise of blood-pressure may contribute. One to four drachms of the liquid extract made from the dry or fresh plant produce diuresis in cases of oedema and ascites especially those due to early liver, peritoneal and kidney conditions. The potassium salts are considered to reinforce the action of the alkaloid.

A. G. B.

BOULAY (A.). **Mode simplifié de préparation des éthers éthyliques de l'huile de Chaulmoogra.**—*Bull. Soc. Path. Exot.* 1923. Feb. 14. Vol. 16. No. 2. pp. 151–154. [7 refs.]

This simple method of preparing ethylic ethers of chaulmoogra oil in default of a chemical laboratory is described as being a modification of HALLER's method. Ten grammes of the oil and 100 gm. of ethyl alcohol of 95° containing 4 per cent. of HCl are placed in a flask and cautiously warmed from refrigeration point. The mass becomes brownish-green and homogeneous, and at the end of two hours the operation is stopped. The uncombined alcohol is then driven off in a hot water-bath, and the liquid remaining in the flask is poured into about 50 cc. of hot water.

The ethylic ethers float as a greenish-black oily liquid, which has to be washed with hot water until all trace of acidity has disappeared. The product thus obtained has the characters of the others obtained by the saponification method of BLOCH and BOUVELOT; it has the characteristic slightly nauseous odour of chaulmoogra, and it is perfectly well borne in intramuscular injection.

A. A.

VAN LOON (F. H.). **Acute Confusional Insanity in the Dutch East Indies.**—*Meded. Burgerlijk. Geneesk. Dienst in Nederl.-Indië.* 1922. Pt. 4. pp. 200–220. [5 refs.]

In this interesting paper Dr. van Loon deals with the matter of acute confusional insanity as he has observed it in the Emergency Asylum for the Insane at Batavia, and particularly with the relationship of the psychosis to malarial infection.

In his opening he outlines the difficulties which have existed in the past for the investigation of mental disorders among the Malay races and laments the paucity of the recorded information on the subject; but this is only to be expected in a country where law and social order are comparatively recent acquisitions, and the fact that his present paper has come to be written is a striking testimony to the advance in efficiency of the civil administration of the Dependency. It is a safe generalization that scientific psychiatry can have no place save under the wing of a settled social order; before that is established, aberrant conduct, which is the material of the psychiatrist, needs must be dealt with on the broad principles of the legal code and, in an immature community, such a code is usually simple and provides but a short shrift for the asocial individual.

The author describes two main types of confusional psychosis: one, a very acute condition of short duration with much motor activity accompanied by hallucinations and illusions of personality and dominated by an affective tone of anxiety or fear, and the other a more prolonged disturbance with general motor restlessness without any dominant fear affect, and in the course of which the patient may develop signs of other mental groupings as stupors, catalepsy, etc. These two types would appear, to the reviewer, to approximate to what would be termed acute delirious mania and toxic confusional or exhaustion insanity respectively. Here it may be remarked that the paper would have been a little more easily read had the author made it clear that "confusion" when found in a mental case has a value comparable to that of a physical sign in bodily disorder, and may be taken to indicate a gross physiological disturbance of the neural basis of mental activity whether it be one due to exhaustion from prolonged reactive stress, to toxins circulating in the blood stream, or to any local interference with the metabolism or nutrition of the neural tissue by accumulations of parasites or whatever trauma may exist. The term Confusional Insanity is, therefore, somewhat misleading unless this is borne in mind, for such a differentiation can be only symptomatic. In cases where there is no actual destruction due to disease or trauma, such as occurs in general paralysis or gross brain injuries, confusion is a passing phase; patients who survive the attack either recover their mental balance or pass on to the exhibition of symptoms of the true psychoses which are essentially mal-adaptations to the environmental circumstances. It is doubtful if Dr. van Loon

quite realizes this point, for, in the etiological division of his clinical material, he separates out a class (C) consisting of cases which progressed to show other psychotic manifestations after the acute confusional disturbance had subsided, and regards the whole sequence of phenomena as due to such other psychoses instead of taking the confusional phase as evidencing the addition of a toxic or exhaustion factor masking the true underlying psychosis.

However, apart from this criticism, which does not really affect the clinical value of the paper, the author found definite evidence of infective origin in 274 out of 333 cases of acute confusion admitted to the institution under his care, and of these 166 suffered from malaria, 76 from syphilis in one or other form, while the remainder gave evidence of such infections as pneumonia, typhoid, cerebrospinal fever, etc. The question of the relation of the mental disturbance to the infection is dealt with at length, but in the case of the malarial patients particularly a striking dependence of the mental symptoms on the course of the febrile disturbance is clearly indicated. The observations recorded are very valuable and should throw considerable light on the causation of the "running amok" which is found in the Malay and Indian races. From the psychological point of view the author considers that the prominence of the fear affect and the intensely vigorous defence reactions characteristic of the confusional state in the native are to be explained by the comparatively simple mental organization of the race, and he regards the conduct of the amok runner as an extreme type of fear response. As he rightly points out, the possibility of the condition being a confusional state which is amenable to treatment should be borne in mind when such an outbreak of violence occurs and the patient should be saved, if possible, from the usual treatment meted out which is that of "laying him down" as the natives express it, and which commonly takes the form of shooting the unfortunate victim at sight.

In thus drawing attention to the possible underlying physical factors in the case of acute confusion the author is performing a valuable service, for it is far too common an experience to find that the ordinary practitioner, and indeed the specialist in any other branch of medicine, is prone to lose all interest in a patient who is exhibiting signs of mental disorder; and, in his findings among the native population of the Malay States, Dr. van Loon is confirming a trend of opinion in regard to many mental states which are under review in more civilized countries. Malaria, as a cause of acute confusion, is rare in this country, though curiously enough the reviewer recently saw a case in which malaria was a highly contributing agent, but the relation of the rather obscure encephalitis to the manifestations of this type of mental disorder is a matter which is assuming an ever increasing importance to the medical profession here.

Thomas Beaton.

i. Levaditi (C.) & Nicolau (S.). **Propriétés physiques des ultravirus neurotropes.**—*C. R. Soc. Biol.* 1923. Jan. 20. Vol. 88. No. 2. pp. 66-69. [1 ref.]

ii. —— & ——. **Filtration des ultravirus neurotropes à travers les membranes en collodion.**—*C. R. Acad. Sci.* 1923. Mar. 5. Vol. 176. No. 10. pp. 717–720. [2 refs.]

i. The authors give here a résumé of their experiments on the adsorption, dialysis, and attraction by precipitins of soluble ferments, of the neurotropic

"ultraviruses" (neurovaccine, encephalitic and rabic viruses). From these experiments they infer that these ultraviruses appear to be composed of living proteid entities whose dimensions seem not much to surpass the dimensions of the albuminoid aggregates that carry diastases and bacterial toxins. They are adsorbed by the same suspensions that fix soluble ferments, toxins, and certain colourants. They attach themselves to serum-globulins which they bring down in their precipitation by dialysis. Thus the ultra-viruses on the one hand, and the soluble ferments and bacterial toxins on the other, have physical properties of the colloidal class in common.

The authors promise to show that, under pressure, the specific germs of all the neurotropic ectodermoses (see this *Bulletin*, Vol. 20, p. 680) pass collodion membranes that wholly or partly arrest albumins, certain soluble ferments and toxins, alexin and the haemolytic amboceptor, but that are permeable by peptones, amino-acids, and D'HERELLE's bacteriophage.

From the practical standpoint the authors conclude that the difficult filtration of certain neurotropic ultraviruses (*e.g.* vaccine) through filter candles is not due to the size of the germs in proportion to the pores of the candles, but to adsorption of the germs by the materials that compose the wall of the filter.

ii. In this communication the authors record their inferences from further experimental work. They show that in the case of filtration through collodion membranes the filtrability of the neurotropic ultraviruses —always reluctant—varies with different membranes and also with the specific nature of the virus, the permeability being greatest in the case of vaccine and successively less and less with the viruses of herpes, rabies, and encephalitis. They offer the explanation that among these viruses, as among other microbes, there must be, in every species, individual differences in size, and that the specific virus that includes the largest number of small individuals will be the most permeable for collodion membranes.

A. A.

PETIT (Albert). **Remarques sur la structure de quelques Bactéries.**—*Arch. Instituts Pasteur de l'Afrique du Nord.* 1923. Vol. 3. No. 1. pp. 71–81. With 1 plate. [2 refs.]

Using more or less familiar fixatives and staining methods and a Zeiss 1·5 mm. apochromatic objective with a No. 12 compensating eye-piece, the author has studied the structure of nine species of Bacteria, including *Bacillus subtilis, pestis, tuberculosis, paratuberculosis* and five unidentified species representative of filamentous, encapsulated and coccus types, and the following is a summary of his results :—

Bacillus tuberculosis and paratuberculosis alone possess a central body staining deeply with iron-haematoxylin and safranin and having the appearance of a nucleus, thus confirming, or justifying, the view that these two species are related to the Fungi, particularly to Actinomyces.

The Streptococcus examined possesses, besides scattered chromophil granules a central "chromatic" mass which divides simultaneously with the cell and to some extent resembles the central body of the Confervoid Nostoc.

None of the other species examined gave evidence of the existence of a nucleus; but all contained chromophil granules—possibly chromatin—scattered in the cytoplasm.

A. A

SCHILLING (Viktor). **Das Hämogramm in der Tropenpraxis.**—*Arch. f. Schiffs- u. Trop.-Hyg.* 1923. Feb. Vol. 27. No. 1. pp. 1–12. With 2 charts in text. [11 refs.]

To emphasize and illustrate in a Journal of Tropical Medicine the value, from every standpoint, of routine examination of the blood is to exhort the converted. The author's haemogram is a standard formula for recording

in every case of disease, the clinical diagnosis, the total and the differential leucocyte counts—the latter in very particular detail, the erythrocyte phenomena, and parasites or other unusual elements. As the author says, such simple obvious formulated records furnish in the course of time data of the highest scientific and practical interest.

A. A.

i. ACTON (Hugh W.). **Medical Research, its Aims and Economic Value.**—*Indian Med. Gaz.* 1923. Mar. Vol. 58. No. 3. pp. 124–127.

ii. HYVERT (R.). **Cure thermale de Pougues et maladies des pays chauds.**—*Rev. Prat. Malad. des Pays Chauds.* Paris. 1923. Apr. pp. 185–188. [4 refs.]

iii. RIBADEAU-DUMAS (L.). **La chaleur et les troubles digestifs du nourrisson.**—*Ibid.* pp. 167–179.

iv. HARTMANN-KEPPEL (G. L.). **La révulsion dans la pratique médicale populaire des Orientaux.**—*Rev. Méd. et Hyg. Trop.* 1923. Mar.–Apr. Vol. 15. No. 2. pp. 44–54. With 1 text-fig.

v. MEDICAL JOURNAL OF AUSTRALIA. 1923. Apr. 14. Vol. 1. Year 10. No. 15. pp. 398–400. **The Australian Institute of Tropical Medicine.**

vi. MOSHKOVSKY (Sh.). **The Moscow Tropical Institute.**—*Amer. Jl. Trop. Med.* Baltimore. 1923. May. Vol. 3. No. 3. pp. 225–231.

vii. YAKIMOFF (W. L.), JOUKOWSKY (A.) & SCHIRWIND (S.). **A propos de l'angine de Vincent.**—*Bull. Soc. Path. Exot.* 1923. Apr. 11. Vol. 16. No. 4. pp. 236–238. [1 ref.]

viii. DELAMARE (Gabriel). **Morve humaine. Sur un cas de farcin chronique de l'homme à types successifs de malaria, d'arthralgies cryptogénétiques, d'infection nodulaire et de suppuration tenace, diffuse.**—*Rev. Prat. Malad. des Pays Chauds.* Paris. 1923. Apr. pp. 123–133. [2 refs.] Also in *Bull. sanitaire de Constantinople.* 1923. Feb. Nos. 7 & 8. pp. 63–68.

ix. HUDELLET (G.). **Volumineux fibrome naso-pharyngien.**—*Bull. Soc. Path. Exot.* 1923. Apr. 11. Vol. 16. No. 4. pp. 278–280. With 1 text fig.

x. HUDELLET (G.). **Epithélioma de la paupière.**—*Ibid.* pp. 270–271. With 1 text-fig.

i. An interesting address given at the Medical Research Section of the Indian Science Congress, January, 1923.

ii. Pougues-les-Eaux is an old spa in Central France. It is claimed that subjects of malaria and other tropical diseases do well there.

iii. Discusses heat stroke, summer diarrhoea, and "infantile cholera" and their treatment.

iv. Various forms of counter-irritation practised in the East, as by tattooing, cautery and fixation abscess, are here described.

v. The control of the Australian Institute of Tropical Medicine founded in 1907–8 was in 1921 transferred to the Commonwealth Department of Health. An account is here given of its reorganization and enlarged aims.

vi. See this *Bulletin*, Vol. 20, p. 18. The present version contains also a brief account of papers read at conferences during the first half of 1922.

vii. Twelve cases of Vincent's angina were seen between Moscow and Petrograd. Details of three are given; the Bordet-Gengou reaction was negative.

viii. A more detailed account of a case already reported, and summarized in this *Bulletin*, Vol. 20, p. 42.

ix. The tumour, of 11 months' growth, filled the naso-pharynx and had invaded neighbouring regions, thrusting the eyeballs out of their sockets and producing frightful deformity of the face. The patient, a native of Dakar, succumbed at the operation. The growth proved to be a fibro-sarcoma.

x. In a West African native, of whom a photograph is given. The tumour, which had caused the atrophy of the ocular globe, is described as "épithélioma pavimenteux tubulé."

A. G. B.

REVIEWS AND NOTICES.

NAPIER (L. Everard) [M.R.C.S., L.R.C.P. (Lond.), in charge of Kala Azar Research, Calcutta School of Tropical Medicine.] & MUIR (Ernest), [M.D., F.R.C.S. (Ed.)]. **Kala Azar. A Handbook for Students and Practitioners.**—pp. vi + 160. With 9 plates, 1 map & 6 charts. 1923. London, Bombay, Madras, Calcutta: Humphrey Milford, Oxford University Press. [Price 8*s*. 6*d*.]

The six chapters of this little book, which is designed for the student and general practitioner, give a remarkably clear and complete account of kala azar—its history and epidemiology, aetiology, clinical aspects, pathology, diagnosis, and treatment, as well as the necessary details for carrying out the all-essential procedures of the laboratory in the diagnostic investigation of this disease.

In the chapter on epidemiology the map illustrating the distribution of the disease in India is a particularly neat feature. In the account of aetiology the various views and conjectures as to the routes and agencies of transmission are very clearly and judiciously discussed. The chapter on symptoms is comprehensive but wonderfully concise; the general aspects and relations of all possible symptoms are considered, but the points of diagnostic value are always brought into relief. Complications and sequelae are dealt with in the same chapter, and here the authors (in consonance with KNOWLES) note their dissent from the view that skin lesions occurring in kala azar have any kindred with those of *Leishmania tropica*. In the chapter on pathology, methods of laboratory technique are included and serum tests are described. The authors write at some length but with good sense of Napier's own aldehyde test, the reliability of which appears to depend in some mysterious way upon season: in the cold season the percentage of confirmed kala azar cases in which it gave a negative result was between 12 and 15, whereas in the hot season the percentage of negative results in a large number of cases was only about 2, and that of positives about 98. In respect of spleen-puncture, the operation for which is very fully described, the opinion is expressed that, provided the patient is under hospital control for the time being, there are few contra-indications. The chapter on diagnosis is short but discriminative. Although all the points in clinical diagnosis are carefully propounded, and although the authors allow that an experienced clinician will make a correct diagnosis ninety times out of a hundred, they consider that a final diagnosis solely on clinical phenomena is "unjustifiable," They are equally emphatic in their opinion that an "absolutely definite diagnosis" should be made before treatment is begun. In the excellent chapter on treatment specific treatment by antimony tartrates naturally receives most attention. The authors admit that nothing is known of the way in which the tartrates of antimony act upon the parasite, that they will not cure every case, that they sometimes have disagreeable effects, and that the course of treatment is protracted, but they are convinced that the elimination of these objections is only a matter of further bio-chemical and pharmacological study.

It remains to be said of the book as a whole that it is superlatively clear and terse, assiduously methodical without a touch of pedantry, and precise without a trace of dogmatism, also that it is well illustrated (though the coloured plate viii is below the general standard), well-documented, sufficiently indexed, well-printed, and well got up.

A. Alcock.

BRUG (S. L.). **De Parasitologische Diagnostiek van de Menschelijke Faeces.** [Parasitological Diagnosis of Human Faeces.] 8vo. pp. iv + 75. With 12 plates. 1922. Batavia: Javasche Boekhandel en Drukkerij.

In 1918 the author of the present manual—who is now Director of the Central Military Laboratory at Weltevreden—published a small book (in Dutch) on "The Parasitic Protozoa of the Human Intestine." The work under review constitutes a second edition of this earlier publication; but at the same time the scope of the work has been somewhat modified, so that it now deals not only with the parasitic protozoa, but also with the worm-eggs which may be found in human faeces. In spite of the additions to the text and figures, however, the author has been able—by omissions and other alterations—to keep the whole work within the same compass as the original edition. Though the brochure is evidently designed chiefly for the use of workers in the Dutch East Indies, it should form a useful addition to any tropical laboratory where the Dutch language is understood.

The present work consists of two parts of unequal length: the first (pp. 1–60) dealing with the Protozoa, and covering the same ground as the earlier edition; the second (pp. 61–67) dealing with some practical points in the examination of human stools for the presence of the eggs of parasitic helminths. There is finally a short list of references to some of the more recent publications bearing on the subjects handled in the text, and an index of some five pages. The 12 half-tone plates, with which the text is elucidated, display several additions to, and improvements upon, those of the previous edition. Plates XI and XII show the worm-eggs commonly seen in human excreta, and are wholly new, though the figures are not wholly original.

In the section dealing with protozoa the following subjects are successively considered: the technique of faecal examination, generalities concerning intestinal protozoa and classification, intestinal amoebae (five species recognized) and the diagnosis of amoebic dysentery, intestinal flagellates (three species), *Balantidium coli*, coccidia. Supplementary sections deal shortly with *Blastocystis*, "pseudoparasitism," and the "yeast-cells" which may occur in human faeces. The section on worms describes very briefly—after a few preliminary remarks—the eggs of Nematodes (six species), Trematodes (four species), and Cestodes (three species). Very little is said of the worms themselves, and it seems a pity that the very interesting—and often economically important—life-histories of some of these organisms are not even mentioned.

It would be unfair to criticize this little work as though it were a zoological textbook intended for general use. Nevertheless, the reviewer may note the following points, which he thinks the author might profitably reconsider in the event of a third edition of his work being called for. (1) The proposition that the intestinal amoebae of man belong to only two genera (p. 12) can hardly be regarded as tenable at the present day, and the genus *Dientamoeba* is surely worthy of at least passing notice—even if it has not yet been seen in the East Indies. (2) Some of the rarer flagellates might also be allowed a little notice; and it is now certainly desirable, if *Eimeria snijdersi* is mentioned, to notice *E. oxyspora* as well. (3) It might profit the author, further, to reconsider the matter of zoological nomenclature. He is evidently no lover of the "nomenclature purist" and the "superprotozoologist"; but if he would study the rules of nomenclature more carefully and consider their object, he might perhaps see his way to follow them more closely in future. It may be true that specialists in zoological nomenclature have sometimes introduced chaos and confusion into what appeared to be an orderly system; but it is also true that anarchy is not usually conducive to a settled state of things. The perpetuation of names such as *Lamblia intestinalis* and *Trichomonas intestinalis*

really does not make for clarity; while the application of *Bodo* and *Prowazekia* (which are really two names for the same thing) to two different organisms unquestionably leads to confusion. The retention of the name "*Amoeba limax*" is also to be deplored, since it is one which has become practically meaningless to the specialist on this group of organisms. (4) The reviewer also thinks that the author might with advantage reconsider the evidence upon which the species "*Entamoeba tenuis*" rests, though he is well aware that this suggestion is not likely to be warmly received. It seems to the reviewer that the Dutch workers, in general, have not appreciated to the full all the evidence which speaks in favour of including this "species" under the synonyms of *E. histolytica.*

A considerable number of misprints and mistakes occur in the list of references (pp. 68, 69) and these will require correction in a future edition. There are also many misprints of less importance—rather too many for a revised version—in the text (*e.g.*, on p. 6 "kleurig met ijzerhaemotoxyline" (for kleuring met ijzerhaematoxyline), on p. 11 "flagellae" (for flagella), p. 20 "Braun'sche beweging" (for Brown'sche—a phenomenon named after the English botanist, not the German parasitologist), p. 21 "Koidzuma" (for Koidzumi), p. 39 "*Iodamoeba bütschli*" (for *bütschlii*), p. 46 "Fanapepa" (for *Fanapepea*) and "cystostoom" (for cytostoom), Pl. XII "*Opistorchis*" (for *Opisthorchis*), etc.). As regards the figures, Fig. 1 (Pl. 1) is not easily identifiable as a portrait of *E. coli*; and none of the figures of *E. histolytica* can be said to show the normal structure of the nucleus correctly, while the "minuta forms" containing starch grains (?) appear to have been drawn, more probably, from small specimens of *E. coli*, and the "uninucleate cyst of *E. histolytica*" (Fig. 2, Pl. V) is also much more like a cyst of *E. coli*. The nuclei of *Iodamoeba* (called "*Endolimax williamsi*") are not, in the reviewer's opinion, correctly delineated in the figures on Pl. VII; the figures of *Trichomonas* and *Chilomastix* (Pl. IX) do not show the structure of these complicated flagellates in accurate detail; and the figure of *Balantidium coli*, on the same plate, shows the anterior contractile vacuole lying ventrally (instead of dorsally, as it should), and does not exhibit the micronucleus. Greater accuracy in these and other matters of detail would enhance the value of the work as a whole, and would help to increase its usefulness to others besides those to whom it is more particularly addressed.

Clifford Dobell.

JENKINS (Charles F.). **Tortola. A Quaker Experiment of Long Ago in the Tropics.**—106 pp. With 8 plates. 1923. London: Friends' Bookshop, 140, Bishopsgate, E.C.2. [Price 5*s*.]

To those who think of them at all, the Virgin Islands are ever memorable as the background of a scene in the last sorrowful act of the life-drama of the imperishable DRAKE: it was from a secret roadstead of the Virgin Islands that the hero of the Armada and of the Spanish Main delivered the unsuccessful assault on Puerto Rico that preluded the attack of dysentery which suddenly extinguished the mortal part of him. The author of the present little epic of Tortola, one of the larger of those of the Virgin Islands that appertain to the British crown, reminds us that a little islet off the coast of Tortola was the stage upon which the famous John LETTSOM, founder of the Medical Society of London, mewled in his nurse's arms, and gives us a very interesting account of the scenes and circumstances amid which that versatile man and his worthy fellows of the Society of Friends played some of their parts. When, after much struggling between Spaniards and English and Dutch and French, certain

of the Virgin Islands, in 1672, finally settled under the British flag, they were not of much value, and it was only by incessant toil that a few English settlers from Antigua began in time to make them yield a little fruit. In 1727 a zealous Quaker missionary visited Tortola. He converted the governor, John PICKERING, and by the middle of the century Quakers were estimated to number about a tenth of the white population of the island. In the time of the Friends Tortola greatly flourished: the whole island blossomed like the rose, and its sugar and rum and cotton were carried afar over seas. In such worldly prosperous circumstances the conflict between high ethical professions and the lure of mammon was decided in the usual way, and Quakers grew rich on the sweat of negro slaves just like their ordinary fellow-Christians: John PICKERING, the wealthy ex-governor, was not the only man in Tortola who found it hard to reconcile the austerities of the Quaker code with the seductions of the primrose path.

It was in the fatness of these pursy times that John LETTSOM was born (in 1744), being, it is said, one of the seventh pair of twins brought into the world by his mother, but the only pair that lived. At the age of six he was sent to England to be educated, and there he came under ward of Samuel, brother of Dr. John FOTHERGILL. At the age of 23 he returned to Tortola, a partly qualified man, to claim his paternal inheritance. His first act was one of noble renunication—he set all his slaves free. After staying six months in his native land, during which, by the practice of his profession he realized £2,000, half of which he gave to his widowed mother, he went back to England, completed his medical education, and eventually succeeded to Dr. FOTHERGILL's practice in London.

Another Tortolan ornament of our profession was Dr. William THORNTON, grandson of John PICKERING on the maternal side and a friend and admirer of LETTSOM. He also, after being educated in England, practised for a time in Tortola, and he also not only set his negroes free but, furthermore, was hardly dissuaded from personally conducting them back to Africa. Eventually he betook himself to Philadelphia, where, being a talented artist and amateur architect, he submitted a design for the Capitol at Washington—and the Capitol of Washington actually "was erected substantially from his plans."

Towards the end of the 18th century Quakerism declined in Tortola. In 1772 and 1880 the island was devastated by terrible hurricanes and even the meeting houses were destroyed. In 1840 a party of the Friends visiting the island found many of the plantations abandoned and overgrown. When next visited by the Friends, in 1913, Tortola appeared almost uncultivated; nothing was seen but ruins of houses and sugar-mills; the very memory of Quakerism was extinct; search for meeting-houses and ancestral tombs disclosed nothing but meagre ruins smothered in the dense undergrowth of resuscitated jungle: nature had resumed her ancient rights.

Since 1913 Tortola and her sister Virgins have recovered to some extent. Their exports, which presumably were at or near zero in 1913, were in 1921 valued at £24,344 (in 1788 they had been £164,128), some English settlers have reappeared (the number of whites in 1921 was 36), and considerable progress has been made in restoring the land to cultivation.

This interesting account of a West Indian islet, which, with an area of only 21 sq. miles, could support in lavish luxury a considerable population of white men and export in one year nearly £165,000 worth (at present values probably about £1,000,000 worth) of its produce, helps us to realize faintly what inexhaustible possibilities of wealth the British Empire possesses in the West Indian Islands, notwithstanding their hurricanes and other vicissitudes of great nature.

A. Alcock.

Hygiene and Disease in Eastern Tropical Africa. The Protection of Aircraft from the Attacks of Insects. Issued as a Supplement to the Handbook of German East Africa. Prepared on behalf of the Admiralty and the War Office. I.D.1055A.—58 pp. With 21 figs & 1 map. 1923. London: H.M. Stationery Office. [Price 2*s*. net.]

This is a wonderful booklet. It contains the large salient facts and principles of tropical pathology and hygiene in what, from its neatness and conciseness, might be called a "tabloid" form, but, from its pleasant aroma of terseness and commonsense, rather more resembles a quintessence. It has sections, with good figured illustrations, on theories of infection and protective vaccination, on general rules of health, and on the principal diseases of tropical Africa and their arthropod carriers, and there is a map. There is also a useful chapter on the protection of aircraft from termites and boring beetles.

The figure of the "instrument for treatment of snake-bite" is perhaps superfluous, that of ankylostoma might be improved, and that of *Anopheles funestus* elaborated. In a future edition figures might be given of eggs of Ankylostoma and Bilharzia, of shells of some common fresh-water snails, and also of *Stegomyia fasciata* seeing that it, rather than *Culex fatigans*, is the common carrier of dengue fever. The statement also that Bilharzia infections are incurable, which suggests that the text is a good deal older than the date appearing on the title-page, requires some mollification.

A. Alcock.